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The Massachusetts Medical Society

THE FRACTURE EXHIBIT AT THE ONE HUNDRED AND FIFTIETH ANNUAL MEETING

BY CHARLES L. SCUDDER, M.D.,† TORR WAGNER HARMER, M.D.,† AND AUGUSTUS THORNDIKE, JR., M.D.†

THE Fracture Committee of the American Medical Association and its advisory group have done during the past few years some constructive educational work that merits great praise. The demonstrations made each year have attracted wide attention because they were of practical value and excellently staged and manned. Every state medical association or society in the United States might well follow the splendid example of the American Medical Association Committee. At least every other year a fracture demonstration might be made with great helpfulness. The Massachusetts Medical Society has had a fracture exhibit every year since the annual meeting in Springfield in 1926.*

One of the Scientific Exhibits at the one hundred and fiftieth annual meeting of the Massachusetts Medical Society held at Boston June 8, 9, 10, 1931, was the Fracture Exhibit.

The prime aim of the committee in charge was the presentation of a few basic principles which would be of practical value to practitioners.

A sequence of demonstrations was deemed desirable. Fractures of the Le[illegible] was chosen as the subject of the Exhi[illegible] he available floor space was partitioned with heavy beaver-board into three booths about six feet wide and six feet deep. This determined the presentation of a triad of phases of the elected subject, first-aid and transportation, diagnosis, and treatment. The material in the booths consisted of apparatus, living models wearing apparatus, electric illuminators displaying roentgen rays, and mural signs and diagrams. These are shown in the accompanying illustrations.

Booth one was designed to demonstrate *FIRST AID AND TRANSPORTATION*. There were two tables each bearing a model. The first model wore a half-ring Thomas leg splint with intrinsic traction by a clove hitch over the shoe. Doctor Robert Findlay, of New York City, showed the contents of the fracture box carried by the ambulances of the Beekman Street Hospital. He used the first model in this booth to demonstrate the application of appliances for transportation of arm and leg fractures. Lists of the contents of the fracture box were printed for distribution. The second model illustrated an appropriate first-aid transportation appliance of pillow and side splints.

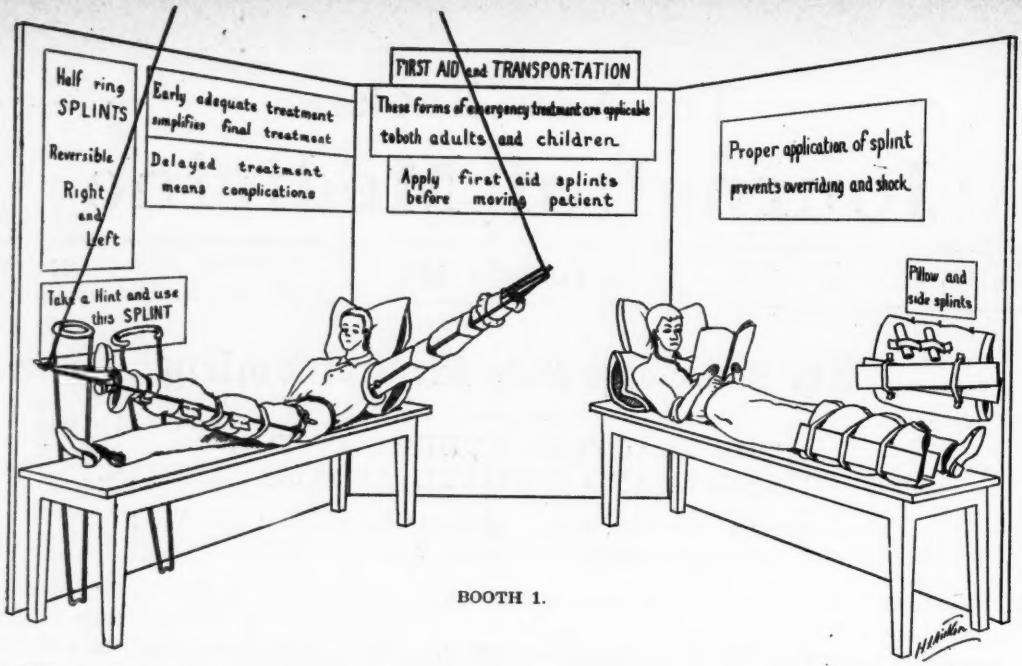
Booth two was designed to demonstrate *DIAGNOSIS*. At the back wall were electric illuminators displaying roentgen rays of four types of fracture of the leg,—Pott's, both shafts with displacement, spiral, and "auto-bumper". The appellation "auto-bumper" was used to designate a compression fracture of the lateral tuberosity of the tibia associated with a fracture of the head of the fibula. On the side walls were large diagrams illustrating fracture *in adults* with deformity due to swelling, shortening, and rotation, and as seen occasionally *in children* with only localized tenderness and slight swelling.

Booth three was designed to demonstrate *TREATMENT*. At the left was a table with a living model wearing a bivalved plaster retained by buckle straps. At the right was a hospital bed with a living model. The legs were concealed beneath the bedspread. The fractured leg was shown as a skeleton of the lower extremity supported on a Thomas splint with traction by a Steinmann pin through the os calcis. The Thomas splint was suspended from a traction-suspension frame designed by Doctor G. W. Hawley. Electric illuminators at the back wall of the booth displayed roentgen rays of a fracture of both bones of the leg artificially produced on a cadaver. The first ray showed this fracture with the fragments over-riding, the second with the fragments immediately reduced in a bivalved plaster, and the third with late reduction accomplished by traction with a Steinmann pin through the os calcis. These details and the mural signs are shown in the third illustration.

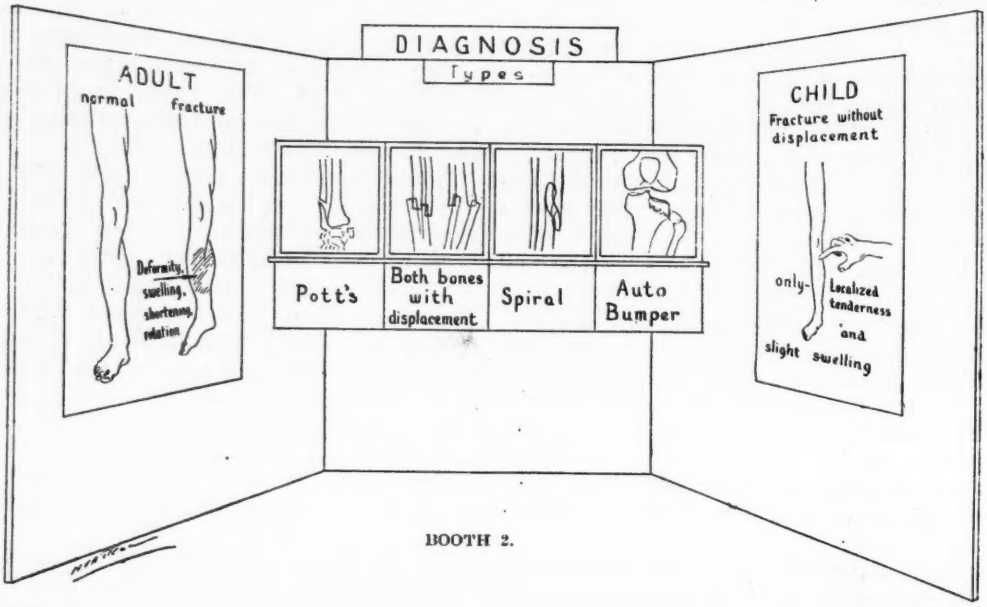
In this Exhibit the committee stressed the importance of traction in first-aid fixation for

*Scudder, Harmer and Thorndike—*Boston Medical and Surgical Journal*, April, 1927—Vol. CXCVI, pp. 555-558.

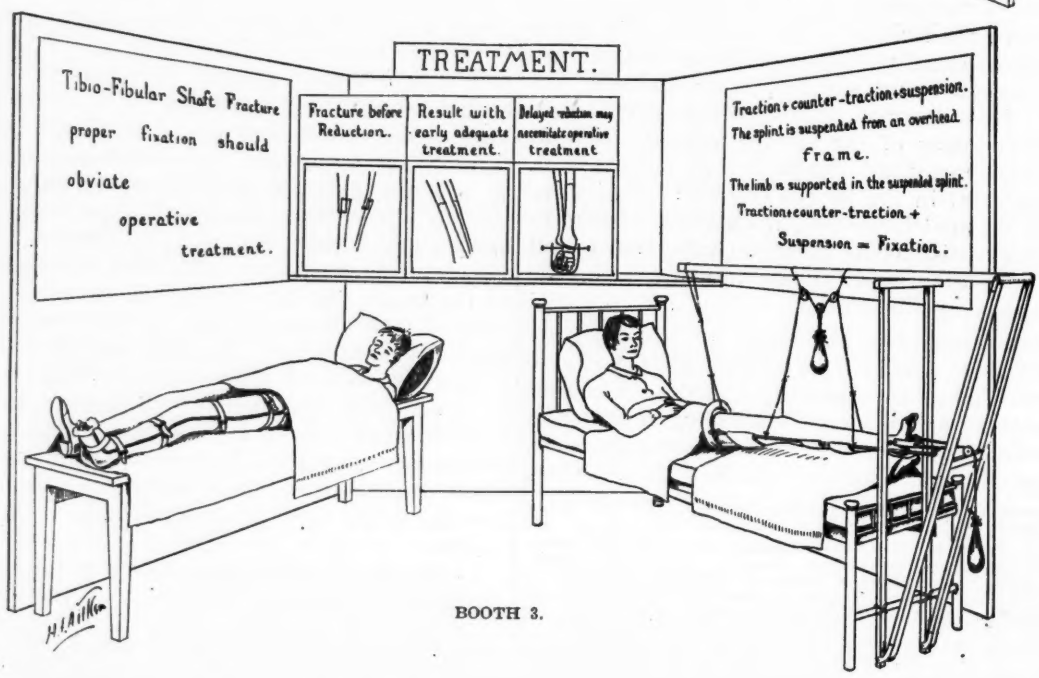
†Scudder—Consulting Surgeon, Massachusetts General Hospital. Harmer—Chief of Service, Surgical Outpatient Department, Massachusetts General Hospital. Thorndike—Junior Assistant Surgeon, Children's Hospital, Boston. For records and addresses of authors see "This Week's Issue", page 735.


FIRST AID and TRANSPORTATION
These forms of emergency treatment are applicable to both adults and children.
Apply first aid splints before moving patient
Half ring SPLINTS
Reversible
Right and Left
Early adequate treatment simplifies final treatment
Delayed treatment means complications
Take a Hint and use this SPLINT
Proper application of splint prevents overriding and shock.
Pillow and side splints

BOOTH 1.



BOOTH 2.



BOOTH 3.

FIGURE 1A.

FIGURE 2A.

FIGURE 3A.

FIGURE 1B.

FIGURE 2B.

FIGURE 3B.

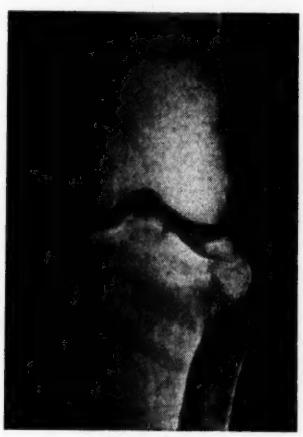


FIGURE 4.

transportation of fractures of the leg. It did not, however, emphasize only this mode of fixation for transportation but approved also the pillow and side splints in certain fractures. The necessity of x-rays demonstrating the type and character of the fracture was emphasized in the second booth. The importance of early reduction to obviate later operative treatment was stressed in booth three.

This demonstration at the One Hundred and Fiftieth Annual Meeting of the Massachusetts Medical Society, planned after the American Medical Association demonstrations, the committee hopes, may prove suggestive to other medical societies contemplating scientific exhibits.

THE TREATMENT OF EXSTROPHY OF THE BLADDER BY URETERAL TRANSPLANTATION*

BY HUGH CABOT, M.D.†

THE problem of the treatment of exstrophy of the bladder has engaged the attention of surgeons since the earliest days. For many years attempts at cure were made chiefly by means of a variety of plastic operations having for their purpose the creation of a closed bladder. We need not concern ourselves with discussing these operations in detail since they all failed, partly because of the inherent difficulties of the situation, but chiefly because it was quite impossible to supply a satisfactory sphincter mechanism and the results therefore were very short of being satisfactory. The next line of attack consisted in the development of various procedures involving transplantation of the ureters to the large intestine. Among the earliest of these was the operation of Maydl which utilized a section of the base of the exstrophic bladder which was transferred to the sigmoid. This was followed by the operations of Moynihan, Martin, Stiles, and Fowler in all of which the principle of transplantation of the ureters to the large intestine or rectum either singly or simultaneously was applied. None of them gave entirely satisfactory results, and the mortality, both immediate and remote, was high. The basic reason for failure was that obstruction of the outlet of the ureters occurred with consequent dilation, hydronephrosis, hydroureter, and ultimately infection of the type of pyelonephritis or pyonephrosis. Obviously the failure of these methods was due to the lack of a satisfactory type of valve protecting the lower end of the ureter.

In 1908 and 1909 Coffey, experimenting with transplantation of the common bile duct, suggested a method of implantation in which the duct was placed directly under the mucous membrane of the intestine. In 1910 he suggested the application of this method to transplantation of the ureters. (Fig. 1.) This method was shortly thereafter utilized by C. H. Mayo, who, in 1917, reported on a series of cases in which this method had been applied. Since that time the principle enunciated by Coffey of dealing with the ureters in relation to the wall of the intestine has been applied in a large number of cases by many surgeons, and it appears certain that the effect on the ureters and renal pelvis is much more satisfactory than by any of the previous methods. It is true that until the recent introduction of intravenous urography there has been little direct evidence of the remote effects, but during the last year a considerable number of cases in which the method of Coffey has been applied have been studied by intravenous urography, and although many appear to show slight or moderate amounts of dilation of the ureters and renal pelves, still the results are satisfactory and renal function is evidently being well maintained. In his original communication Coffey suggested doing the operation in two or more stages and this method became the basis of the Mayo operation. Since that time Coffey has further developed his technic so that in his later publications he advocated the simultaneous transplantation of both ureters into the rectum. (Figs. 2, 3 and 4.) The method which he employs is a transperitoneal one and if divided into two stages it considerably increases the difficulty of the second stage, owing to abnormal adhesions resulting from the first operation. It will be noted that by the present technic the Coffey operation is applicable to all varieties of cases in which transplantation of the ureters is desirable.

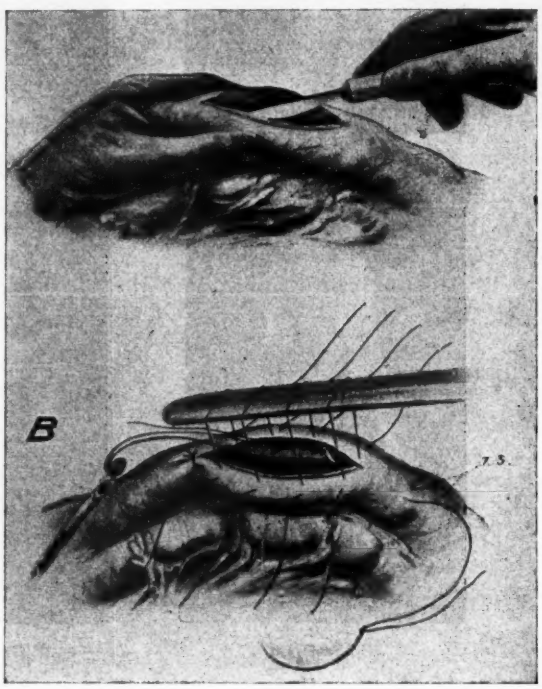


FIG. 1. Technic of insertion of ureter into intestine as originally described by Coffey.

THE PROBLEM OF EXSTROPHY

The satisfactory treatment of exstrophy of the bladder, with which may be included those cases of complete epispadias in which attempts to restore the vesical sphincter have failed, is a problem somewhat different in kind from a variety of other conditions calling for ureteral trans-

*Read before the III Panamerican Medical Congress, Mexico City, Mexico, July 26-31, 1931.
From the Division of Surgery, The Mayo Clinic, Rochester, Minnesota.

†Cabot—Professor of Surgery, University of Minnesota Graduate School. For record and address of author see "This Week's Issue", page 735.

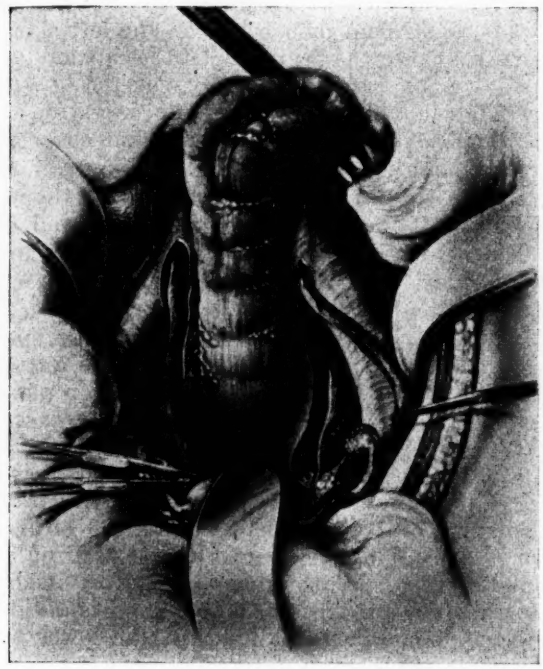


FIG. 2. Ureters mobilized and severed.

plantation. The peculiarities of the situation are in general as follows: The patients are, or should be, children. At the time of coming under observation the ureters and the kidneys

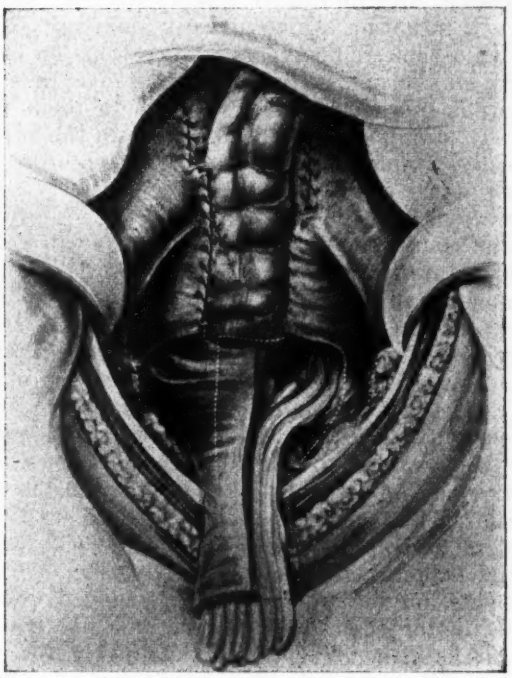


FIG. 4. Two double wicks have been placed in each of the two posterior peritoneal incisions for retroperitoneal drainage. Two others have been placed in the cul-de-sac, intraperitoneal. A four ply sheet of folded gutta percha tissue is placed above the gauze on the patient's right side. Dotted lines indicate where a similar gutta percha covering is to be placed on the other side.

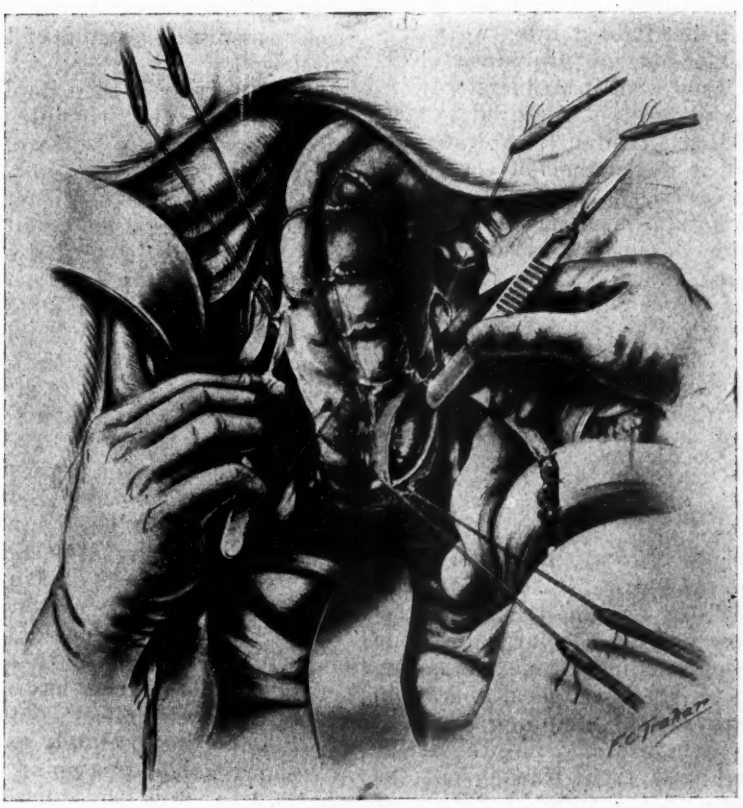


FIG. 3. Traction loops in place for holding bowel while incisions are made. The lower or left incision has been made through the muscularis, the handle of the knife separating the muscle from the mucous membrane.

are as a rule undilated and in normal condition, a situation which usually does not exist under other circumstances. Operations on children may properly be spread out over a considerable period of time which is to them relatively unimportant as compared with the adult. Finally, young children as a rule stand relatively short operations well and relatively long operations badly.

The conditions in adults calling for ureteral transplantation are of great variety but will commonly involve operation on abnormal ureters. Of the lesions for which transplantation may be seriously considered cancer is an important one. Other destructive lesions of the bladder, chiefly inflammatory, are perhaps the next important. There will be a few cases of incurable vesicovaginal fistula and finally some cases of irreparable destruction of the sphincter mechanism. The problem in these cases differs from that of exstrophy because as a rule the ureters will be abnormal on at least one side. These patients, on the whole, stand prolonged operations better than do children, and finally for them the element of time, particularly for patients with cancer, becomes a serious consideration.

TWO-STAGE OPERATIONS ADVISED FOR EXSTROPHY

As suggested the two-stage operation seems to have definite advantages for children. The complete Coffey operation by its most recent technic cannot well be divided into two stages and becomes a neck-or-nothing procedure. This appears to me to carry with it an inevitably increased risk which we are not required to take in the case of children although I am quite prepared to regard it as the method of election if the ureters are to be transplanted as a preliminary measure to total cystectomy for cancer. The Mayo operation has been carried out as a two-stage procedure and has given eminently satisfactory results. Although we speak of this operation as a two-stage procedure it should, in fact, be spoken of as a three-stage procedure since the ureters are transplanted one at a time, and the removal of the mucous membrane of the bladder with cure of the inevitably existing hernia will require a third stage.

TECHNIC

The operation about to be described is the one which I have employed since 1920. It utilizes the Coffey principle of placing the ureter beneath the muscular wall of the large intestine covered only with mucous membrane. It is carried out chiefly as an extraperitoneal operation, the ureter being exposed by stripping the peritoneum from the pelvic wall, dividing the ureter close to the vesical wall, then drawing out the appropriate portion of the sigmoid flexure of the colon through a short incision in the peritoneum so placed as to allow the application of the ureter to the bowel without kinking. On the right side the ureter is inserted into the extremity of the sigmoid loop, while on the left side it is inserted into the beginning of the sigmoid loop just after it becomes entirely covered by the peritoneum, and close to its juncture with the descending colon. It is important that the right ureter should be transplanted first, since if the left is moved first some confinement of the sigmoid loop by adhesions may take place and the difficulties of transplanting the right ureter may thereby be considerably enhanced. Briefly stated, the technic is as follows:

Right side.—1. An oblique incision is made from a point 2 to 4 cm. median to the anterosuperior spine of the ilium. This incision passes downward and inward to the edge of the exstrophy.

2. The peritoneum having been exposed it is stripped from the iliac fossa exposing the ureter from the point at which it crosses the bifurcation of the iliac artery down to the wall of the bladder. The ureter is mobilized from its bed for a distance of from 3 to 5 cm. and is divided close to the wall of the bladder, the lower end being tied. (Fig. 5.)

3. An opening is made in the parietal peritoneum directly median to the ureter. Through this the sigmoid loop is drawn out to an extent sufficient to allow the application of a slightly curved clamp which should be placed from above downward, the ureter lying between the jaws of the clamp nearest to the lock, but being free from pressure on account of the thickness of the bowel wall.

4. The ureter is then implanted into the sigmoid following the principle enunciated by Coffey, the ureter being held within the lumen by a single catgut suture passed through all the layers of the ureter at its cut end, introduced into the bowel through an opening in the mucous membrane at the lower end of the incision, and brought out at a point about 2 cm. lower, at which point it is securely fastened to the intestine. I have been in the habit of turning in the peritoneal coat of the intestine to cover this suture since there seemed to me to be some chance that sloughing with fistula formation might result. (Fig. 6.)

5. The peritoneum is then closed, anchoring the sigmoid loop to the parietal peritoneum both above and below the point where the ureter enters. The purpose of this anchoring is to prevent the peristalsis of the intestine from drawing it away from the ureter. (Fig. 7.)

6. The wound is closed in layers leaving a small tube drain down to the opening in the peritoneum. This drain has been employed since serum is likely to collect, contamination from the bowel cannot be absolutely excluded, and should infection occur at this point, the security of the whole operation is jeopardized.

Left side.—The procedures are the same in all respects except that the sigmoid flexure at this point lies directly beneath the parietal perito-

neum, and if desired the whole operation can be carried out extraperitoneally by utilizing the portion of the sigmoid still incompletely covered by the peritoneum on its posterior surface. It is unnecessary to anchor the sigmoid to the bladder and avoiding opening the peritoneum if this can be safely accomplished. In some cases the opening of the peritoneum is unavoidable and has not in my experience been objectionable. The principle of the cure of the hernia is

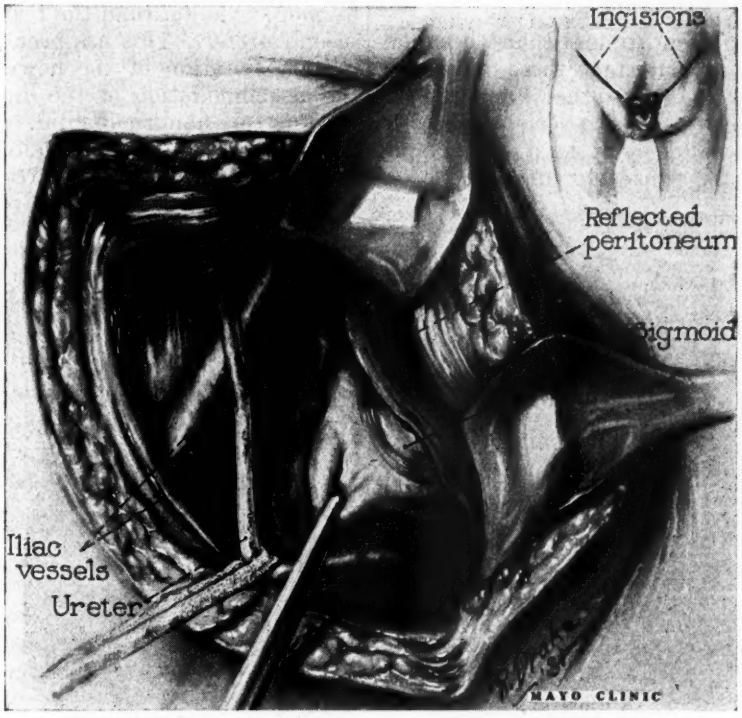


FIG. 5. Elevation of ureter from its bed. Incision in peritoneum and sigmoid loop drawn out preparatory to application of clamp.

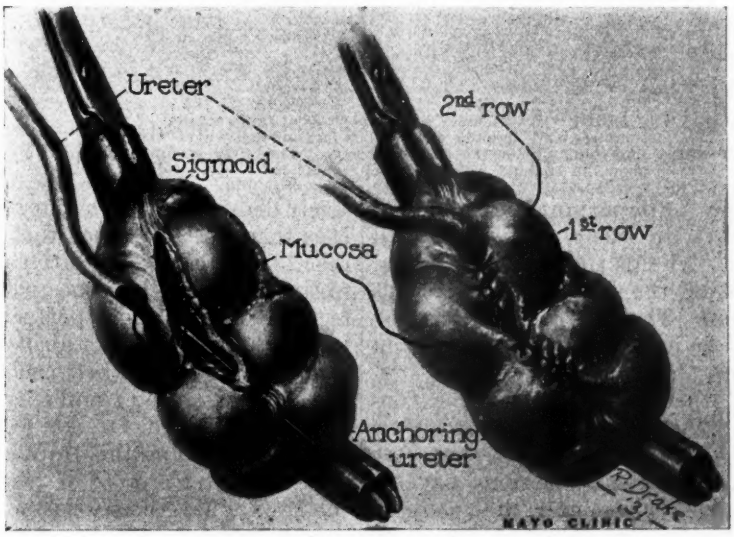


FIG. 6. Method of introducing ureter into the lumen of the gut and closure of incision in two layers.

parietal peritoneum since its attachments are already sufficient.

REMOVAL OF THE MUCOSA OF THE BLADDER AND CLOSURE OF THE HERNIA

This, the third stage of the operation, consists in the careful removal of the mucous membrane, often carrying with it the muscular wall of the not importantly different from that applicable to umbilical hernia. Satisfactory layers of fascia must be obtained and may be united either vertically or transversely, according to which method gives the most satisfactory apposition without tension. It is generally necessary to mobilize the skin flaps on the sides by dissecting them back above the fascia until they can be

readily approximated in the median line. There is always an ample amount of lax skin and subcutaneous tissue which can be mobilized without difficulty.

APPLICATION OF TECHNIC TO CHILDREN WITH EXSTROPHY

Until relatively recent times it has been believed undesirable to undertake these operations on young children. On the other hand the deformity of exstrophy becomes a serious factor in the lives of these children at least as early as the age of two years. In early infancy the deformity is relatively unimportant and does not seriously interfere with their activities until they begin to walk. At this time the protruding mucous membrane of the bladder is a serious source of irritation. The posture assumed by these children will be one of leaning forward in the attempt to keep clothes away from the irritated surface and their activities will be considerably confined. As the children grow older, the effect of their deformity on their character becomes increasingly evident. Serious psychic trauma undoubtedly occurs, and this coupled with the physical annoyance seems to me to require us to undertake these operations at the earliest moment compatible with safety. I have operated on one child at the age of sixteen months, but found the parts rather small, and as a rule I do not now undertake to begin the operation until about the age of two years. For these young children it has seemed to me desirable to separate the stages of the operation more than would be desirable for older children. I am therefore in the habit of allowing at least six months to elapse between the transplantation of the first ureter and the transplantation of the second. As pointed out by C. H. Mayo, the transplantation of the first ureter is followed by more reaction than the transplantation of the second ureter. This has been assumed to be due to the irritation of the bowel by urine and to the accommodation of the intestine to the presence of this abnormal fluid. I will simply note at this time that these reactions do not always take place and that they are becoming progressively less severe with improvement of technic. It is therefore suggested that part at least of the reaction is due to conditions outside of the intestine and may be expected to diminish as our technic becomes more perfect. The interval between the second and third stages of the operation, that is to say, between the transplantation of the second ureter and cure of the hernia, need not be prolonged. Of late years I have been in the habit of doing this third stage, even in young children, after a lapse of two to four weeks, and the results have been satisfactory.

FIG. 7. Condition at end of operation, implantation of ureter complete and sigmoid anchored to peritoneum above and below the point of introduction of ureter. Insert shows the points upon the sigmoid utilized for implantation.

CASES TREATED BY THIS METHOD

From 1921 to date I have operated on fourteen patients using this method.

Age and sex.—The ages of these patients have varied from sixteen months to twenty-six years, the average age having been slightly more than eight years. They may be divided into the following groups: one to six years, six patients; six

to twelve years, five patients; twelve to twenty-six years, three patients. Nine of the patients were males and five were females.

Results.—There have been no deaths either immediate or remote. One patient has been well for ten years; two patients have been well for nine years; three have been well for seven years; four have been well for three years; one patient has been well for two years; one has been well for one year, and two patients have been well for less than one year.

Unfortunately we have as yet been able to get intravenous urograms in only three cases. All of these show slight dilation of the ureters, most marked on the right. All show slight dilation of the renal pelves, and all show good renal function, as indicated by the excretion of the drug.

The general condition of all of the patients is satisfactory. One, nine years after operation and now aged twenty-six years, is in good condition and able to do a full day's work. The children have gained weight satisfactorily and have grown within normal limits. It seems clear that this operation gives results superior to those obtained by previous methods of transplantation and quite as satisfactory. We have records that two of the women have since married and one of them has passed through two normal pregnancies; the other has passed through one pregnancy. This tends to show that the kidneys have been able to support the extra strain incident to pregnancy and labor.

CONCLUSIONS

1. The principle enunciated by Coffey of ureteral transplantation to the large intestine has been shown to be more satisfactory than any method previously employed.
2. For patients with exstrophy of the bladder or epispadias in which other operations have failed, the three-stage method of operation gives a low mortality and satisfactory results.
3. Evidence is submitted to support the view that this method gives better results than previous methods of transplantation.

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LOW INCIDENCE OF PARALYSIS DEVELOPING IN POLIOMYELITIS CASES SEEN IN PREPARALYTIC PERIOD

A study of the cases at the Willard Parker Hospital indicates a low incidence of paralysis developed in cases seen in the preparalytic period; only 17½ per cent. of the cases seen in the preparalytic period have developed paralysis. Wickman, in his study of the Swedish outbreak in 1905, estimated that 40 to 60 per cent. of the cases with preparalytic symptoms developed paralysis. The low incidence in the present series of cases may probably be explained, according to Dr. James D. Smith, Medical Director of Willard Parker Hospital, by the following:

1. Earlier recognition and treatment of cases before the possible development of paralysis.
2. Recognition of a larger number of cases of preparalytic poliomyelitis, many of which have undoubtedly escaped diagnosis in previous epidemics due to failure to develop paralysis.
3. The mild character of the present outbreak with a predominance of non-paralytic forms of the disease.—*Bulletin No. 35, New York City Department of Health.*

BABIES AND MILK DRINKING

The new-born infant can tell the psychologist about what he is able to taste and feel, according to the report of Dr. Kai Jensen, of the Connecticut Agricultural College, to the meeting of the American Psychological Association. The language used by the infants studied by Dr. Jensen was the pressure of their sucks on a nursing bottle as recorded on a complicated apparatus which he designed especially for this purpose. When milk of the correct temperature is in the bottle, the infant will suck and then swallow rhythmically and with equal pressure. But let the temperature be raised or lowered enough and he will suck much less vigorously, with increasing irregularity, until he stops altogether. The temperature acceptable varies greatly with different infants. Some will take it as cold as ten degrees Fahrenheit above freezing point. Some will drink milk as hot as 150 degrees, although the usual temperature for feeding is about 105 degrees. Differences in temperature of less than four degrees are detected by the infants.—*Science.*

MEDICAL PROGRESS

PROGRESS IN ANESTHESIA IN 1930

BY PHILIP D. WOODBRIDGE, M.D.*

DURING the past year sodium amytal, avertin, and other agents were given extended clinical trial and laboratory investigation; spinal anesthesia continued in wide use under more experienced and mature guidance than was available immediately after its recent burst into popularity; new agents and methods for both general and regional anesthesia were introduced; and the use for therapeutic purposes of various methods employed in anesthesia attracted considerable attention especially for the treatment of vascular disease and for the prevention of pneumonia.

There continues to be serious disagreement on some of the most important phases of the practice of anesthesia. The opposing opinions, though honestly expressed, often have their source in habit and in uncritical prejudice. Romberger[116] has aptly pointed out the need of an Anesthesia Foundation as a source of trustworthy information and unbiased judgment. Doubtless anesthesia is not alone among the specialties in need of such an organization.

In addition to reviewing the more important material that appeared during the year, the author will here and there state his impression of the trend of common usage and the likely value of newer drugs and methods.

PRELIMINARY NARCOSIS

General Choice. Leake[77, 78], viewing the subject as a pharmacologist, advises restricting the use of morphine to those in whom an analgesic is needed, including all who are to have spinal or local anesthesia. The main reasons for avoiding it with others are that its stimulating action outlasts its depressing action, it produces constipation, it depresses the respiration markedly, and has undesirable effects on the sugar and acid-base balance of the blood. Pantopon does not seem preferable, as it is more constipating and contains many alkaloids of relatively unknown action. Barbital given by mouth appears to be the logical drug to use in place of morphine when relief from pain is not needed. It depresses metabolism and has no stimulating action. No other derivative of barbituric acid seems superior to it, except for the few very apprehensive patients in whom profound narcosis by intravenous sodium amytal seems indicated. Magnesium sulphate is occasionally needed for the control of motor excitement. As atropine causes cortical stimulation it should be used only for the purpose of preventing reflex stopping of the heart with chloroform and excessive secretion of mucus with ether.

Differential Action of Barbituric Acid Derivatives. A report from the University of Wisconsin[43] differs from the opinion expressed by Leake as to the general applicability of barbital. The authors studied 11 barbituric acid compounds, found that in animals the margin of safety was the same for all, and that they differed mainly in the length of their action. The longer acting drugs, such as barbital and phenobarbital (luminal) cause death in dogs not from their maximal concentration in the body but from later pulmonary complications which result from deficient respiration and loss of temperature. The more quickly acting drugs, on the other hand, are effective in smaller doses, are eliminated more quickly, and are therefore more free from late complications. They cause death from respiratory depression at the height of their action. These include nembutal (sodium ethyl methyl butyl barbiturate with intravenous narcotic dose of 0.2 to 0.5 gm. in 5 to 10 per cent. solution), pernocton (sodium secondary butyl beta bromallyl barbiturate, dose 0.4 to 0.8 gm.) and, though less rapid than these, sodium amytal (sodium isoamyl ethyl barbiturate, dose 0.6 to 1.4 gm.). They consider the choice for intravenous use between the various compounds to depend entirely on the length of the narcotic effect desired, the shorter action appearing preferable for preoperative use, the longer action for miscellaneous medical purposes. They agree with Leake in considering the barbiturates to be not true analgesics and not suited to the production of anesthesia, as the margin between the anesthetic and the fatal doses is small.

Lundy[85, 86] likewise found nembutal to be more potent and of briefer action than sodium amytal, prefers it as a preoperative sedative, and avoids using it as an anesthetic. He found dial (diallyl barbituric acid), neonal (ethyl butyl barbituric acid) and—here differing from the Wisconsin investigators—pernocton all to be less potent than sodium amytal.

Antidote for Barbiturates. Dextrose given intravenously was found by Johnson, Luckhardt and Lighthill[68] to halve the recovery time from the effects of heavy doses of barbital. Their work included experiments on dogs and the successful treatment of a would-be suicide with 1500 c.c. of 5% dextrose.

Further discussion of barbiturates will be given under the heading "Basal Anesthesia."

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Morphine. Fear of renal damage by morphine has long since been effectually routed by Haines and Milliken[53, 54]. Now two other investigators[1, 81] working independently with morphine and opium addicts, conclude that there is no evidence of damage to the circulatory, hepatic, renal, or endocrine functions from the prolonged administration of large quantities of these drugs.

Antidote for Morphine. As the best injectable respiratory stimulant available, ephedrine is hailed by Chen and Schmidt[26] and Doyle[32] as by far the best antidote for morphine.

Paraldehyde. After giving paraldehyde before 250 anesthesias, Phillips[110] finds that although it makes induction pleasant for the patient and easy for the anesthetist, yet it definitely increases postoperative vomiting and prolongs postoperative discomfort.

Scopolamine. This drug continues to be widely used by some, vigorously denounced by others. There is some evidence that deterioration from aging is responsible for some of the untoward effects reported by those who seldom use it.

BASAL ANESTHESIA

This phrase has been used to indicate so deep a state of narcosis produced by preliminary medication that the amount of added inhalation anesthetic required to produce surgical anesthesia is greatly reduced and the patient is unaware of its administration. The name seems ill-suited, for the condition is commonly one of moderately deep narcosis with or without very light anesthesia. Various derivatives of barbituric acid may be used either as simple preliminary hypnotics or as basal anesthetics.

Sodium Amytal (Sodium Isoamyl Ethyl Barbiturate).* The large number of favorable reports concerning the intravenous use of this drug would indicate that it was very widely used in this manner. It is the author's impression, however, that its intravenous use is rather restricted, but that it is a very popular and well-established narcotic for administration by mouth and by rectum.

Most of those who report on its intravenous use agree on the following points: Individual susceptibility to the drug varies greatly, and the intravenous method permits accurate gaging of the individual dose, since its full narcotic effect is evident immediately. The dose should not exceed the amount necessary to produce sleep; administration should not be continued to the point of producing surgical anesthesia because of consequent marked depression of respiration and blood pressure, prolonged narcosis with shallow respiration, late pulmonary edema, and restlessness or excitement during lightening of the narcosis. The greatest enthusiasm is expressed over the elimination of the psychological strain on the patient incident to approaching the operating room and having the anesthetic administered. When a general anesthetic is used, much less of it is required—for example nitrous oxide may be given without producing anoxemia. Postanesthetic nausea and vomiting are greatly reduced or entirely eliminated, and the need for morphine on the first day after operation is greatly diminished. These are the advantages that form the basis of its popularity. The occasional postanesthetic restlessness may be controlled by morphine. The drug is contraindicated in the weak, the hypertensive, and the arteriosclerotic.

During injection there is a temporary fall of blood pressure which averages 30 to 40 mm. Hg., being greater and more persistent in those with hypertension. It is recommended that injection be stopped when the systolic pressure reaches 85 or 90 mm. The drop may be greatly lessened or entirely prevented by using a more dilute solution and injecting more slowly[9, 10, 66] or by adding a limited amount of ephedrine to the solution[121, 141].

Pulmonary edema and death occurred mainly in the case of large doses, or of elderly patients with marked weakness or vascular sclerosis. The cases listed in Table 1 were reported during 1930. It appears that the incidence of pulmonary edema following intravenous administration has been less than 1 per cent., that the mortality has been between 0.3 and 0.6 per cent., and that in nearly every case the author feels, on looking back, that the drug was contraindicated or that the dose was unwisely increased beyond the point of producing sleep. With increasing familiarity with the drug, lower incidences of complications and death are to be expected. Even in this brief tabulation it is seen that the larger series show the lower rates. (Table 1.)

When used intravenously with local anesthesia it has generally, though not always, been unsatisfactory[31, 42, 44, 49, 62, 92]. The patients are neither analgesic nor coöperative. With spinal anesthesia, however, it has proved satisfactory in several hands[42, 90, 113, 121, 141].

Catheterization after operation is reported as being needed in 10 to 25 per cent. of the patients[19, 90, 93]. One surgeon found, however, that with increasing experience the nurses could rouse patients to take fluids well and to void, and thereby greatly lessen the proportion needing catheterization.

The dosage of sodium amytal for rectal administration to infants is given by Lundy as 1/2 grain for those less than 1 year of age, 1 grain from 1 to 2 years of age, and 3 grains for those 2 to 3 years old—approximately 1 grain for each year of age.

The pharmacology is thoroughly discussed by Isenberger[66] and by Bourne and his associates[15]. Morphine should be useful to combine with so-

*See references 15, 19, 40, 41, 42, 43, 44, 48, 49, 59, 62, 66, 82, 85, 86, 89, 90, 92, 93, 111, 113, 121, 123, 141.

dium amytal for the purpose of general sedation, since the first acts mainly on the cerebral cortex, the second on the midbrain[66]. Bourne, Bruger and Dreyer found that 1 gm. of sodium amytal given intravenously influenced liver function but slightly (dye-retention test), affecting it less than ether. It causes a slight dilution of the blood, whereas there is a marked dilution with ether. The hydrogen-ion concentration of the blood increases, as it does with ether, but there is little or no change in the carbon dioxide combining power[15, 49, 66]. There is a slight rise in blood sugar, rarely exceeding the normal[49, 59, 66, 89, 90]. The nitrogenous constituents probably are not seriously affected[93], as one investigator found a slight increase in urea[89, 90], another a slight drop in total nonprotein nitrogen[66]. The hemoglobin percentage and the red cell count show no immediate or delayed change[89, 90]. Urinary secretion, in marked contrast to that following ether anesthesia, indicates little or no renal damage[15]: there is oliguria (possibly due to lowered blood pressure) as contrasted to the complete anuria or marked oliguria after ether, and the power to concentrate the urine is retained as shown by an increased concentration of urea and chlorides, whereas after ether their concentration is decreased. Excretion of phosphoric acid is increased more than after ether. The rectal temperature of animals was found to fall 2° to 3° C.

Bleckwenn[9, 10] has administered doses of 1 gm. intravenously daily over periods of months to neuropsychiatric patients. By oft-repeated tests he has found no alteration of renal or hepatic function.

Nembutal (*Sodium Ethyl 1 Methyl Butyl Barbiturate*). This drug is similar to sodium amytal, of which it is an isomer. It is effective in smaller doses. Those who use it preoperatively prefer it because of its shorter action and relative freedom from late restlessness and excitement[43, 85, 86]. Its use seems to be spreading, encroaching on the field of sodium amytal.

Pernocton (*Sodium Secondary Butyl Beta Bromallyl Barbiturate*). This drug appears to be popular in Germany but to have made little headway in this country. Fitch, Waters and Tatum[43], of the University of Wisconsin, previously quoted, recommend this and nembutal preoperatively as the two most rapidly acting derivatives of barbituric acid. McCarthy[94] finds it to be twice as powerful as sodium amytal when used intravenously, whereas Lundy[85, 86] reports it to be less powerful.

Phenobarbital. Bartlett[6, 7] uses this drug ("luminal") to produce basal anesthesia by giving from 0.8 to 2.0 gm. three hours before operation. According to the Wisconsin investigators[43] it is one of the more slowly eliminated derivatives of barbituric acid.

Avertin (*Tribromethanol*). Sodium amytal has been admitted to listing in New and Non-Official Remedies by the Council on Pharmacy and Chemistry of the American Medical Association, although not for intravenous use. Avertin has been refused admission[2] on the ground that there is no agreement among those using it as to dose, contraindications, technic, or safety.

It is the author's impression that avertin by rectum is used fully as much as sodium amytal by vein, but certainly not so much as sodium

TABLE 1

INTRAVENOUS SODIUM AMYTAL: INCIDENCE OF PULMONARY EDEMA AND DEATH

Author	Total Number Cases Reported	Pulmonary Edema No.	Pulmonary Edema Per Cent.	Deaths No.	Deaths Per Cent.	Remarks
Brown	82	1	1.2	1	1.2	Age 77. Prostatectomy.
Graham	22	1	4.5	1	4.5	Alcoholic hepatic cirrhosis. 1.5 gm. Required nitrous oxide.
Grandstaff	200	none mentioned		2	1.0	1. Diabetes, hypertension, nephritis, gangrene; age 66. 2. Severe hepatic cirrhosis and jaundice; age 70.
Lundy	728	4	.55	none mentioned		Mainly large doses.
Mason, Baker and Pilcher	305	3	1.0	1	0.3	Early in the series; large doses.
McCann and Fallon	170	4	2.3	3	1.8	2 severe cardiovascular disease. 2 gassed (war); 1 bronchiectasis.
Total tabulated above	1507	13	.86	8	.53	
Other 1930 reports (See bibliography)	907	none mentioned		none mentioned		
Total of all of above	2414	13	.54	8	.33	

amytal by mouth, and that its future is quite in doubt. Because of its somewhat more rapid action, its novelty, and its relative freedom from causing local irritation, it has encroached upon the field of colonic ether. But here it is proving a disappointment to many, who find it too depressing to use for complete anesthesia. Its administration is too inconvenient for it to be widely used simply as a preliminary narcotic. It seems likely that, until it is superseded by other drugs, it will be used as a basal anesthetic in a rather narrow range of cases[88]. It has not enjoyed elsewhere the popularity it has had in Germany, the country of its origin. Leake[77, 78] has remarked that it was introduced by those who had rarely seen good modern gas anesthesia, and its usefulness is limited (by its depression of vital centers) to very fearful or excited patients and sub-anesthetic doses.

The most comprehensive single article on the subject in English is that of Waters and Muehlberger[132]. They review the literature and report their pharmacological studies and their series of over 200 cases. Bruger, Bourne, and Dreyer[21] made a study of the drug parallel to their study of sodium amytal previously referred to. As with sodium amytal, avertin affects but slightly liver function (dye-retention test), blood concentration, and blood hydrogen-ion content. The carbon dioxide combining power increases in the first half hour and then falls off, but not severely. Unlike sodium amytal, it causes a sharp rise in blood sugar, which returns to normal in 6 to 24 hours. Renal function, as measured by volume of urinary output and the concentration and total amount of urea, is depressed to a degree equal to that produced by ether and considerably greater than that produced by sodium amytal. Phosphoric acid excretion is increased. The rectal temperature of dogs falls slightly more than with sodium amytal. White and Kreiselman[133] examined the blood of numerous patients 24 hours after avertin anesthesia and found the white blood count increased by over 6000 per cu. mm., a slight negligible decrease in hemoglobin percentage and red cell count, no change in clotting time or in blood sugar, an increase of 4.5 mg. of non-protein nitrogen per 100 c.c. and a decrease in chlorides.

Tissue damage appears to be more likely than the early German reports indicated. Waters and Muehlberger[132] gave to three animals 8, 14, and 20 successive anesthetic doses at intervals of 2 to 5 days. Somewhat similar experiments in Germany were reported to show entirely normal organs, but these experimenters found slight hydrops of the heart, one bronchopneumonia, marked swelling, pallor, and vacuolation of the liver cells, almost obliterating the capillary field and in one case distinct atrophy of most of the liver cells, congestion of renal glomeruli with degeneration of tubules and much albumin in their lumens, hyperplasia (2 cases) and necrosis (1 case) of splenic corpuscles, and in one an acute ulcerative colitis.

The clinical reports*, however, are for the most part enthusiastic. There is fairly general agreement on the following points: Preoperative morphine should be used sparingly with it. Induction is very delightful for the patient. There is frequently a drop in blood pressure of 10 to 20 mm. Hg. and occasionally there is cyanosis. When an inhalation anesthetic is added, much less is needed than if avertin had not been given. It is indicated especially for goitre surgery, and contraindicated in cachexia, in disease of the liver or kidneys, or in patients in whom respiration is obstructed, labored, or inefficient. Postoperative vomiting is absent or greatly diminished and the need for postoperative analgesics is greatly lessened.

The average recommended dose varies from 80 to 130 mg. per kg. of body weight of the normally vigorous adult, more being required for children and thyrotoxic patients, and less for the elderly and the weak. The larger doses are recommended for fractional administration[50]. Only one anesthetist[129] plans always to produce complete anesthesia by avertin alone; most of the others have reduced their dose after experiencing the marked prolonged depression which results from the larger doses. Speidel acknowledges frankly the disadvantage of the drug and of the rectal method in general, and has reduced his dose to 50 or 60 mg. per kg., thereby minimizing the disadvantages and retaining the chief value of the drug. Most of his patients are oriented, can converse rationally though slowly, but are devoid of fear and have complete amnesia for the duration of the effect of the drug. Supplemental anesthetics are added as needed.

Avertin fluid (100 per cent. solution of avertin in amylene hydrate) is much preferred by almost all. But Waters[132] prefers the crystals, since he found that with the amylene hydrate preparation patients were more irrational and restless and had longer postoperative sleep. Bourne and his associates[21] found that the amylene hydrate preparation caused apnea and cyanosis in 60 per cent. of the dogs to which it was given, whereas crystalline avertin did not.

The best antidote for avertin appears to be caffeine given intravenously[127, 132].

Waters and Muehlberger report two deaths, one from obstruction of the airway 3 hours after operation in a child of 18 months, the other 10½ hours after operation in a patient with brain tumor. Another death reported from Liverpool[87] was that of a healthy young adult undergoing inguinal herniorrhaphy. Those reporting the case concluded that "he failed to eliminate the drug". The report leaves the author to question whether he may not rather

*See references 38, 41, 50, 51, 80, 107, 126, 127, 128, 129, 132, 133, 139.

have died from obstruction of the respiratory passage—that common and frequently overlooked accident which causes far more emergencies under general anesthesia than all other causes combined.

In Germany Anschutz, Specht, and Tieman[126] collected reports of 103 deaths from avertin and considered most of them due to improper use of the drug.

GENERAL ANESTHESIA: DRUGS AND METHODS

Carbon Dioxide Absorption. A new apparatus which may prove to be of the greatest importance to the technic of gas anesthesia has been announced by Sword[131]. The principle involved is not new, but heretofore there has not been on the market an apparatus sufficiently convenient and efficient to be generally adopted. With the usual method of giving gas, the amount of rebreathing that may be permitted is limited by the accumulation of carbon dioxide, and the new gas is constantly supplied merely for the purposes of washing away the excess carbon dioxide and of supplying oxygen to replace that which the patient has used. In the new apparatus the carbon dioxide is removed by soda lime, the metabolic need of the patient is met by constant addition of a small amount of oxygen, and after the nitrogen has been washed out of the patient and a suitable depth of anesthesia has been induced, the supply of anesthetizing gas (nitrous oxide or ethylene with or without ether) is shut off and the patient rebreathes the same gas throughout the operation. The mask is connected in a circuit consisting in order of mask, exhaling tube, soda lime container and rebreathing bag (these are mounted on the gas machine) and inhaling tube. Sensitive flutter valves control the direction of gaseous flow, and by a third valve the anesthetist controls the portion of expired gas that shall pass through the soda lime. The resulting anesthesia presents several characteristics. Since the inspired gases are warm, moist and relatively free of carbon dioxide, the patient's bodily heat and moisture are conserved and respiration is quiet and effortless. The abdomen is correspondingly quiet in abdominal surgery. The expense of gas anesthesia is greatly reduced, and anesthetic gases are not thrown out in any considerable volume into the operating room. The method holds promise of greatly improving gas anesthesia and deserves to be widely adopted.

Ethylene[88, 102, 103]. Although a few instances have come to the author's attention in which hospitals previously using ethylene have given it up, yet it is his impression that almost all anesthetists who have used it extensively in the past are continuing to use it as frequently as ever. Nix, of New Orleans, sent out a questionnaire concerning ethylene to all parts of the country. The replies covered 100,000 administrations. Among these there occurred not one immediate death, and but two that might indirectly be due to ethylene. He feels that its use is growing, and that it is particularly adapted to the humid climate of the South.

Attempts to demonstrate a reversible combination between ethylene and hemoglobin were made by Barnard and Hastings[5]. They use three methods: gasometric, electrometric, and spectrophotometric. No evidence of such a combination was found, and the conclusion seems justified that ethylene does not enter into any combination with hemoglobin.

Explosions. The year 1930 produced much authoritative valuable information concerning the hazard, cause, and prevention of explosion of anesthetics.

Recently explosions of ethylene have been given greater publicity than those of ether. So far as the author is aware, there have been but four deaths from ethylene explosions. One followed the use of ethylene on a machine which was not designed for ethylene and was highly unsuited to its use, since it could permit nitrous oxide to flow into ethylene tanks and vice versa, and thereby cause extremely explosive mixtures within the tanks. A second death[108] occurred while 25 per cent. ethylene with 75 per cent. oxygen was being given for obstetrical analgesia with frequent raising of the mask, and apparently no attempt to dissipate static electricity by metallic connection or control of humidity within the machine—a highly explosive proportion of ethylene with excellent conditions for the development of static sparks. The remaining two deaths followed the use of the cautery—one on an abscess of lung, one on a carbuncle of neck. In the light of present knowledge all these deaths would be preventable. Four preventable deaths from explosion in administrations numbering probably well over a million! Regarded from the point of view of explosion it appears to be an extremely safe anesthetic. This incidence of death contrasts most favorably with that from urinary suppression following ether, or from collapse under spinal anesthesia. (Sise showed the total death rate from spinal anesthesia to be between 1 in 100 and 1 in 200 when the method first became popular in a typical urban community.) A spinal death is not spectacular; a death by explosion is.

A report from the United States Bureau of Mines[69] points out that in testing the explosibility of varying mixtures of gases, the results depend on several variable factors. With the standard technic of the Bureau ethylene is inflammable in mixtures of from 3 to 80 per cent. with oxygen. They make no distinction between inflammability and explosibility. Horner and Gardenier[63] had previously reported the explosive range as from 5 to 70 per cent., and Brown[20] has shown that in gas machines ranges of 75 per cent. and above could not be made

to explode by an electric spark. The mixtures commonly used for complete surgical anesthesia therefore appear to be non-explosive, although by altering the conditions, mixtures up to 80 per cent. ethylene can be made to propagate flame.

In an excellent and authoritative article Williams[137] points out that the present gas machines are dangerous for use with ether or ethylene. Charges of one to several thousand volts are easily built up on the rubber parts. Neither the patient's lungs nor the ordinary type of water bottle can be relied on to moisten the gases sufficiently to dissipate static charges. He states emphatically that in order to avoid static charges within the machines all rubber must be eliminated from them. This may be done by using a metal spirometer and flexible metal tubing. A specially designed mask will maintain contact with the patient even during vomiting or the insertion of a mouth tube*. If the air of operating rooms is maintained at 60 per cent. relative humidity and 70° F., static charges outside the machine will be dissipated, the patient will benefit from diminished heat loss, and the operating room personnel will be comfortable. Installation of equipment to maintain these conditions in summer and winter in a ten-room operating suite was found to cost $30,000.00. After operation the patient and the machine should not be flushed out with oxygen, as this makes them both immediately highly explosive. The patient's hair should not be combed or stroked, heated dry blankets should be used only with great care, and smoking utensils should be removed from the patient's room.

A very sensitive apparatus was used by Cheney and Folkman[27] for determining the concentration of inflammable gases in the operating room. The lower limit of inflammability of ethylene in air is 3.05 per cent. Several thousand readings showed that the only dangerous area was above the mask and within one foot of it, or in line with the vent of the mask and within two feet of it. With a cloth shield between the head and chest, there was a concentration of but 0.2 per cent. ethylene over the patient's chest. Ten feet away from the patient's head there was too little to be determinable, and due to its property of rapid diffusion there was no tendency for the concentration to increase after several hours of anesthesia.

The report of the Committee on Anesthesia Accidents of the American Medical Association[57] includes the matter of the articles by Williams and by Cheney and Folkman just referred to, reviews the answers to questionnaires covering about 640,000 ethylene anesthesias, and makes further recommendations. Gas tanks not recently tested for pressure tolerance should not be used. No oil should be used on the valves of oxygen or nitrous oxide tanks. All electrical apparatus in the operating room should be so enclosed as to be gas-proof. Yet it is surprising to find the following statement: "Cautery in the abdomen is safe only when there is a screen . . . between it and the patient's face," implying their tacit approval of this procedure. Unlike ethylene, ether diffuses slowly, so that it is possible for streams of slightly explosive ether mixtures to drift around the operating room. They find that flares and explosions of ether are much more common than of ethylene but are not so violent because of the low concentrations of ether used. They agree that high relative humidity is good protection from static spark arising outside the gas machine, but feel that better protection is afforded by complete grounding of the operating room floor, furniture, and personnel (by rivets through the soles of shoes, or by a gate or post to be touched on entering the room). The mere grounding of the gas machine to a water pipe is probably ineffectual.

Worthy of deep pondering is their conclusion[4, 57] "Explosion is statistically today the least of the hazards of anesthesia." "Surgeons and anesthetists need far more to utilize the means now available for preventing postoperative pneumonia than they do to worry over the hazard of explosions, except, of course, the explosions due to carelessness. Nitrous oxide, ethylene, oxygen, and carbon dioxide kill less than 1 patient by explosion for each 100 or more they probably save from death by postoperative pneumonia."

Nitrous Oxide. A technic for nasal administration of nitrous oxide for tonsillectomy which, it is claimed, abolishes all danger of inspiration of blood, etc., is described by Hollis, Clay, and Ruth[61] of Philadelphia. Their claim is proved by postoperative laryngoscopic examinations. The patient sits in a chair, leaning forward. The surgeon's head is below that of the patient, so that he looks slightly upward into the field of operation. The method is easy for the anesthetist, abolishes the danger of inspiration, and by affording a clearer field of operation for the surgeon, results in a lessening of the proportion of incomplete operations.

Hayward[55] makes a needed plea for the freer use of anesthesia for the relief of repeated painful dressings such as those of extensive burns. He cites cases in which he has given nitrous oxide anesthesia daily from 30 to 80 times, without any apparent ill effects.

Ethyl Chloride. Like scopolamine this drug still seems to be used freely by those who are accustomed to it, and feared by those who do not use it. Several reports have appeared recently, all favorable[8, 22, 56, 91]. Mavrocordato in over 3000 administrations has seen no disturbing ill effects since his early experience when two or three patients were given an overdose. Two of the authors accept Miller's mortality rate of 1 death for every 13,365 anesthesias. Buchanan considers it 1 in 17,000, and contrasts this with

*A method of dissipating static charges on the McKesson machine, proved by the electroscope, is given by Livingstone[83].

Gwathmey's estimate of 1 death for every 10,000 nitrous oxide administrations. He further says, "Dr. Howe, in reply to an inquiry, states that in 100,000 administrations of ethyl chloride as a general anesthetic at the Forsyth Dental Infirmary no fatalities nor alarming postoperative effects were noted."

Rectal Ether-Oil Anesthesia. The failure of this type of anesthesia to establish a position of importance in the many years it has been available seems to be a strong argument against it. Wood[140] of Edinburgh has declared himself one of its supporters. For long anesthesia he finds it has less ill-effect than any other type. In 50 administrations for brain operations he had one case of irritation with slight hemorrhage. There will be further consideration of this method under the heading "Obstetrical Anesthesia."

Intravenous Alcohol. A favorable report from England[28] of over 40 intravenous alcohol administrations is contradicted nearly point by point by an Italian writer[106] who finds that thrombosis of the vein is almost constant, and that marked lowering of the blood pressure, pulmonary congestion, and renal lesions are frequent.

Intratracheal Anesthesia. It is the author's impression that this method, popular in Canada, is gaining ground in this country, encroaching on the fields of nasal, pharyngeal, and rectal administration. The large soft Magill tubes for introduction through the nose are being extensively tried by a few.

SPINAL ANESTHESIA

Blood Pressure. Labat[76] and his followers continue to form a separate group who do not try to maintain blood pressure. He has issued the rule, "No ephedrine, epinephrine or any other hypertensive drug before or during spinal anesthesia." He argues that vasoconstrictors are effective only in the unanesthetized area, while permitting vasodilation in the anesthetized segments, and that they thus force the blood from the brain, where it is needed, to other parts of the body where it is not needed. He places sole reliance on the Trendelenburg position. The author feels that his following is limited.

Sise[122], a member of the opposite school, discusses vascular depression and the means of combating it, and points out that if epinephrine or ephedrine is given subcutaneously when the pressure has fallen not more than one-third, the result will be prompt and satisfactory, whereas if it is allowed to drop more than this, absorption will be slow and the result unsatisfactory.

Ephedrine. Chen (to whom we are indebted for ephedrine) and Schmidt[26] give a complete and detailed exposition of the present knowledge of the pharmacology of ephedrine. Certain portions of this are of especial importance to the anesthetist. On the blood pressure, the first dose, unless very large, always has a pressor effect, but repeated doses finally bring a depressor effect. The pressor effect of a single dose lasts 6 to 8 hours. Mixing the drug with epinephrine combines the advantages of the two and lessens their disadvantages. A small dose of ephedrine definitely causes a strengthening of the heart beat with either increase or decrease in its rate, but large doses, by direct action on the heart muscle, cause depression and may lead to cardiac failure. It causes constriction of blood vessels, and does this by peripheral action, not by way of the central nervous system. Its point of action is not the capillaries; therefore it is not a suitable substitute for epinephrine in local anesthetic solutions. The splanchnic vessels are affected most. It increases the red blood count and the white blood count and causes hyperglycemia. As an antidote for narcotics it is the most effective respiratory stimulant known, possessing the characteristics of both caffeine and epinephrine. For maintaining the blood pressure during spinal anesthesia they advise giving it well before the anesthetic is administered, so as to raise the pressure 20 to 30 mm. above normal. In circulatory collapse it is still a question in their minds how much good it can do, though they call attention to Rudolph and Graham's excellent results obtained by giving it intravenously after blood pressure has fallen. Untoward effects are very numerous, depending on instability of the nervous system. The symptoms most frequently encountered are palpitation, tremor, weakness, sweating, feeling of warmth or cold, and nausea or vomiting.

Spinocain vs. Procaine Crystals. Those who do not favor spinal anesthesia (and the author understands there is such a class) have not rushed their convictions into print. The current literature therefore strongly emphasizes the favorable aspect. Pitkin's spinocain has its supporters[25, 30, 47, 71, 115] while others favor simple procaine hydrochloride[37, 65, 67, 74, 96, 130]. Nevertheless it is the author's impression that many of those who have used spinocain for its controllable anesthesia have returned to procaine*, sharing at least some of the opinion of Hill[60] when he says, "The Pitkin method gives little control over the duration of the anesthesia, less over its height, and practically none over the blood pressure." He considers that since the action of strychnine, a constituent of spinocain, is to break down synaptic resistance in the cord, it leads to the early return of rigidity. He therefore uses a solution resembling spinocain but with strychnine omitted, and notes that Jonnesco abandoned the intrathecal use of strychnine after 15 years' trial.

Complications and Deaths. Campbell[25], reporting 1520 administrations of spinocain and of simple procaine crystals for urological operations, had 4 cases (0.26 per cent.) of meningismus and 4 deaths (0.26 per cent.). Of these, one was due to a colon bacillus meningitis caused by improper sterilization of an aqueous solution, one was "typically a cardiac fatality" 20 min-

*The author still uses spinocain,—and with satisfaction.

utes after injection, and two were in moribund septic patients who, he feels, should not have had spinal anesthesia. His ultimate postoperative mortality was 4.4 per cent. less than with "general anesthesia". Headaches occurred in less than 3 per cent. and there were no cases of nerve injury. He has abandoned the double spinal puncture which he previously advocated, since he finds that equally good results may be obtained by using a larger dose at a single puncture.

Deaver and Eckels[80], using spinocain and apothesin in 2302 cases, found headaches in 5 per cent., and had two deaths (.09 per cent.), one of which was due to respiratory failure. In the other patient, moribund before operation, the spinal injection was a failure, nitrous oxide was given, and the patient died during the operation "apparently of surgical shock".

Jackson[67] in 1000 cases, found headache in 1.5 per cent. and transient paresthesias in 0.4 per cent. Two needles were broken in the back.

The other articles cited either made no mention of important complications or noted their absence.

A comprehensive search of European and American journals for data on the complications of spinal anesthesia was made by Koster* and Weintrob[73]. Headache, with an average incidence of 20 per cent., is the most troublesome and frequent complication†. To avoid it one should use a small needle, make but a single puncture, avoid injecting air, and keep the patient quiet for several hours. The treatment of various types of headache is given in detail. Backache occurs in a small percentage of cases, is usually brief and is relieved by a pillow under the lumbar spine. Anal and vesical disturbances are infrequent and transient. Ocular disturbances are few, and for the most part have followed the use of drugs other than procaine. Koster and Weintrob encountered meningismus in about one in every 600 of their patients. In treating this, the usual analgesics are unavailing. Magnesium sulphate should be given by mouth or intravenously and lumbar puncture performed. Meningitis is rare. Only 9 cases were found, of which only 2 were fatal. In most, the data were so meagre that the diagnosis seemed in doubt. In this connection, they maintain that sepsis is not a contraindication to spinal anesthesia, as there are numerous cases on record, to which they add 30, of spinal anesthesia in the presence of a positive blood culture, with no meningitis resulting. Suppuration at the site of injection, however, is a contraindication. Nerve injuries fortunately are rare and usually are transient. Psychic disturbances are occasionally met. Pulmonary complications they find to be "certainly less frequent . . . than after inhalation narcosis".

*It was Koster who in 1928 advocated general anesthesia by the spinal method.

†They purposely omit consideration of the usual *accompaniments* of spinal anesthesia, such as low blood pressure, nausea and pallor.

Effect on Spinal Fluid[65]. The spinal fluid of 31 patients was examined before and again 12 hours after spinal anesthesia induced by dissolving procaine hydrochloride in the fluid. Cell counts were made in 14 of these. In 3 of the 14 the cell count was normal (5 to 12 cells per cu. mm.), and in the remaining 11 it varied from 20 to 800 cells per cu. mm., all lymphocytes except that in the fluid with the count of 800 all were polymorphonuclear leucocytes. The sugar content was examined in 20 cases. In 3 of these there was less than 10 per cent. increase, but in the remaining 17 there was an average of 37 per cent. increase, the greatest single increase being 135 per cent. Albumin and globulin content and the colloidal gold curve were unchanged. Of the 31 patients, 10 had vomiting after operation, 1 had sciatic pain for four days, and 1 had headache, dizziness, and sciatic pain, but there was no correlation found between these sequelae and the occurrence of high cell counts.

Effect on Cardiac Output. Burch and Harrison[23] conducted 8 experiments on dogs in which they induced spinal anesthesia by procaine, alone or with strychnine, in doses "of the same magnitude as those employed clinically". Cardiac output was determined by the Fick principle. With slight drops in blood pressure they found no change in cardiac output, but drops of 30 per cent. or more were followed somewhat later by a lowering of the output. The percentage drop in cardiac output varied from ¼ of the percentage drop in blood pressure to an equal percentage. With blood pressure falling 20 to 67 per cent. cardiac output fell 6 to 56 per cent. Blalock has shown that in hemorrhage, on the contrary, cardiac output falls before blood pressure. Therefore these authors conclude that a drop of blood pressure from hemorrhage is of much more serious significance than a similar drop from spinal anesthesia.

Nupercain. This drug, referred to in Germany as percain, is not related chemically to procaine or cocaine, is more toxic than cocaine[14], is effective in minute doses, and gives anesthesia considerably outlasting that of procaine. It has been hoped that it would prove a valuable agent for producing spinal or regional anesthesia for long operations, but it has not gained popularity in this country. The author knows of a few who have stopped using it because of apparent toxic or irritant effects. Keyes and McLellan[72] report its use in over 100 urological cases. They prefer it to procaine. Length of anesthesia averaged about 7 hours. They refer to 3 previously reported deaths after the subcutaneous administration of 90 and 130 c.c. of 1:1000 solution and after an intradural injection that was intended to be paravertebral. They also report 5 previously unpublished deaths, 3 of which followed the injection of strong solutions by mistake, 1 followed the subcutaneous injection of 380 c.c. of 1:1000 solution, and the fifth followed

the injection of 1 per cent. solution into the bladder. Jones[70] of London likewise prefers nupercain to other local anesthetics, partly because it produces a much smaller drop in blood pressure. This is attributable to the small amount of drug used and its great dilution, since these would make its absorption into the blood stream very slow.

LOCAL ANESTHESIA

For Fractures. Rice[114] reported again on the use of local anesthesia for the reduction of fractures. His review of the literature indicates that the method is used extensively. One author reported over 2000 injections. One per cent. procaine-epinephrine solution is injected into the fracture gap. In case anesthesia does not develop within three or four minutes, a ring of periosteum of the proximal fragment should be injected in addition. He gives detailed instructions for the injection of the more common fractures. Contraindications are infection and compound fracture. In 200 cases he has met with no complication, and none has been reported by others. It does not result in infection or in delay of healing.

For Urethra. From Germany comes the announcement[45] of a novel method of anesthetizing the male urethra prior to instrumentation. A suppository of oil of theobroma 6 cm. long and 4 mm. in diameter, containing 0.3 gm. of procaine hydrochloride is introduced and massaged toward the posterior urethra. It should be placed in warm water before insertion, and 20 minutes should be allowed for anesthesia to develop.

OBSTETRICAL ANESTHESIA

Gwathmey's Analgesia. Gwathmey[52] continues faithful in his support of his method of obstetrical analgesia. His conclusions are based on over 20,000 cases. The progress of labor is not delayed. Postpartum hemorrhage is less than with any inhalation anesthetic. The use of forceps is decreased. There have been no fetal deaths attributable to the method. Most babies are born crying. Maternal morbidity is decreased.

An article by Emge and Cooley[39] of San Francisco contradicts many of these claims. They used it in 200 labors which they expected would be either of average length or prolonged. One hundred and seventy-nine of their patients were primiparous, 21 multiparous. Labor ceased in 8, and appeared to be retarded in 15, hastened in 37. The effect on the fetus they considered a very serious drawback; 14 required strenuous methods of resuscitation, 2 were stillborn and 21 had opisthotonos and slight cyanosis immediately after delivery. The need of forceps was definitely increased—in 64 patients the fetal head remained on the perineum for an hour, thereby requiring instrumental delivery. Rectal irritation was present in 33 patients, severe in 6 of these. There was one abscess from the magnesium sulphate injections. They found the method a great help in the protracted labors of posterior positions, and received the impression that spontaneous rotation occurred more frequently under its use.

Epidural Anesthesia. Nearly 1000 epidural injections for obstetrical anesthesia are reported by Rucker[117]. Of these, 85 per cent. were successful. The technic consists in the caudal injection of 35 c.c. of 2 per cent. procaine solution without epinephrine. If changed at all, the uterine contractions are increased in force. Because of the relaxing of the perineum, lacerations are fewer and less extensive—over 31 per cent. of the primiparous patients had no tear. Owing to its effect on the uterus, blood loss in the third stage is diminished. Several patients had low blood pressure, and one had a slight convulsion. There was one death in an intensely toxemic patient, caused presumably by the unwise injection of the procaine solution when it was known that the needle had pierced the dura.

Spinal Anesthesia. This was used with mediocre success by Cosgrove[29] in over 400 patients. He gives 50 mg. of ephedrine hypodermically and 10 minutes later 50 mg. of procaine hydrochloride intraspinally. The patients are quiet and like the method. The soft parts are relaxed, bleeding is lessened and there is no asphyxia of the infant even when morphine is used. However, although manometric readings show little effect on the uterine contractions, yet other signs indicate that labor practically ceases for a varying length of time. [The author questions whether this was due to the spinal anesthesia or the ephedrine.] He found that pituitrin was effective in overcoming this but was followed in several cases by dystocia.

Sodium Amytal. In a preliminary report after a trial on 46 patients, investigators in the Mayo Clinic[101] state that sodium amytal causes relaxation of the perineal muscles, rapid softening of the cervix, shortening of the first stage of labor, and gives sufficient analgesia to justify further trial. There was no interference with the child's breathing. They gave 3 grains by mouth when the cervix was partly effaced and was dilated at least 2 cm. Larger doses and earlier administration were not successful.

It has been shown by Zerfas and McCallum that amounts up to 18 mg. per kg. of body weight do not affect uterine contractions.

Effect of Various Drugs on Uterine Contractions. By recording intrauterine pressure Bourne and Burn[16] found that ether and chloroform arrest contractions in the first stage of labor, and lessen their force and frequency in the second stage. "Gas"-oxygen has no effect, but spinal anesthesia with stovaine interferes with relaxation, probably causing a continuous contraction of the lower segment. Morphine makes the pains less frequent but longer. Atropine stimulates contractions, and quinine has little effect.

Local Anesthesia for Cesarean Section. Hume[64] states that merely field block of the abdominal wall gives sufficient anesthesia for Cesarean section, and considers it indicated in severe disease of the heart, kidney, or lungs, and in eclampsia.

MISCELLANEOUS ADJUNCTS

Physostigmine Salicylate. A very strange state is reported by Garrelon[46] to follow the injection of 0.5 mg. of this drug into patients who are lightly under the influence of ether or chloroform. He claims that they are anesthetized and that the abdominal wall is well relaxed, although they continue to talk and laugh freely, and recover very promptly when the mask is removed.

Cardiotachometer[11, 12]. This is an amplifier for the action currents of the heart, connecting either to an audible ticker or to a tape marker, and designed to be used on patients undergoing operation.

TOXIC EFFECTS

On the Heart. It is an accepted principle that during muscular contraction glycogen breaks down to form lactic acid, and that during muscular recovery lactic acid combines with oxygen to form glycogen again. Brow and Long[18] found that the glycogen content of the cat's heart was markedly decreased by prolonged administration of various anesthetics, and that lactic acid was increased. They therefore conclude that anesthetics interfere with the recovery phase of cardiac muscle. Since alterations in glycogen-lactic acid balance affect cardiac function, this action of anesthetics may be important in the etiology of cardiac failure during and after anesthesia. Diabetes, hyperthyroidism, and probably other states also, by depleting the carbohydrate stores, probably accentuate this action of anesthetics. They consider chloroform more toxic in this respect than ether, and ether more toxic than nitrous oxide.

In relation to the claim of some anesthetists that the dangers of chloroform are minimized or abolished by administering oxygen with it, it is interesting to note that these investigators found cardiac glycogen reduced far more by chloroform given on a mask than by chloroform administered with a mixture of oxygen and carbon dioxide.

In gas anesthesia the heart dilates far more frequently if induction is started with 100 per cent. nitrous oxide than if started with 50 per cent., or, better yet, with pure oxygen[112].

On the Liver. Bollman[13] of the Mayo Clinic points out that most of the common anesthetics cause an increase in glycemia at the expense of hepatic glycogen. In hepatic disease and nutritional disturbances, hepatic glycogen is already reduced. The liver's resistance to most toxic substances depends on high glycogen content, and this function may be protected by giving glucose before and after operation.

SHOCK

Hemorrhage Under Ether and Spinal Anesthesia. Burch, Harrison and Blalock[24] anesthetized one group of dogs with ether, another with intraspinal procaine, recorded their blood pressure and cardiac output, and then in divided bleedings removed an amount of blood equal to 3 per cent. of their body weight.

They found that in animals under ether the blood pressure and cardiac output fell about as much as in unanesthetized animals, but that in the 9 dogs which they bled under spinal anesthesia the falls were much greater, and 4 of them died. They conclude that hemorrhage is much more dangerous under spinal anesthesia than under ether.

*Stimulants**. Phelps[109] states his reason for discarding all the common cardiac and circulatory stimulants except digitalis. In adequate doses he prefers this because it is a cardiac tonic and general vasoconstrictor, with dependable, pronounced and sustained action.

ARTIFICIAL RESPIRATION

The Drinker respirator[34, 35, 36, 100, 119, 120] appears beyond a doubt to have proved its worth for the prolonged administration of artificial respiration in such conditions as poliomyelitis. It consists of an air-tight chamber in which the body is enclosed with the head protruding through a snugly fitting rubber diaphragm. Alternating negative and positive pressure within the chamber compels the chest to expand and contract. The question arises whether it would be of benefit in the operating suite. It seems doubtful whether under working conditions the patient could be removed from the operating table and locked into the respirator as quickly as the anesthetist could start artificial respiration by pressure on the oxygen-filled rebreathing bag of the gas machine.

THERAPY

Methods used in anesthesia are being used more and more in therapy and the services of the anesthetist are thus coming into wider activity outside of the preparation of patients for operation. The scope of this paper permits hardly more than an enumeration of these therapeutic uses of the methods of anesthesia.

Carbon Dioxide Inhalation. Henderson and Haggard[3, 58] have pioneered in the use of this procedure, urging its adoption for the prevention of postoperative pneumonia and in the treatment of carbon monoxide poisoning, atelectasis of the newborn, and if taken early, medical pneumonia. Henderson has properly ridiculed the medical profession for permitting the maternity hospital to send for the city fire department to resuscitate their newborn instead of developing their own gas therapy.

Drinker and Shaughnessy[33] advise starting the

*See also the paragraph on Ephedrine.

treatment of carbon monoxide poisoning with 7 per cent. carbon dioxide in oxygen, and shifting later to the usual 5 per cent. mixture.

Carbon dioxide and oxygen inhalations are being used to bring periods of lucidity to patients with catatonic dementia precox[79].

Oxygen Inhalations[84, 138]. Wineland and Waters give detailed instructions for so placing a pharyngeal catheter that a flow of from 7 to 8 liters per minute will give 50 per cent. oxygen in the inspired mixture.

Sodium Amytal. Bleckwenn[9, 10] reports most interesting marked therapeutic effects in a variety of severe neuropsychiatric conditions from the daily intravenous injection of this drug.

Rectal Ether. This is again advised in the treatment of whooping cough[97].

Pain Relief. Labat[75] described the induction of paravertebral alcoholic nerve block for the relief of pain following thoracoplasty, and White[134] made a further favorable report on the use of the same method in treating angina pectoris. Woodbridge[142] reviewed various therapeutic uses of regional anesthesia, including the treatment of reflex anuria, sciatica, ileus, and tetanus, and the relief of pain in carcinoma, tuberculous laryngitis, and diseases of the thoracic and abdominal viscera. The treatment of ileus by splanchnic anesthesia is advocated by Ochsner, Gage, and Cutting[104, 105].

Vascular Disease. Remarkable progress is being made by Smithwick and White[124, 125, 135, 136], Morton and Scott[98, 99, 118] and others[17, 95] in the treatment of spastic and obliterative vascular diseases of the extremities. The methods used include sympathectomy and diagnostic and therapeutic nerve block.

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EARLY DIAGNOSIS CAMPAIGN CONDUCTED BY THE TUBERCULOSIS ASSOCIATIONS OF THE UNITED STATES

With over 100 state officials, doctors, nurses and social workers in attendance the fifteenth anniversary of the New Hampshire Tuberculosis Association was held at the Eagle Hotel, Concord, New Hampshire, with a luncheon October 1, 1931. Governor Winant, president of the association, presided and congratulated the organization on its wonderful record and on the fact that it holds the lowest tuberculosis record in the United States.

Dr. H. E. Kleinschmidt, Medical Director of the National Tuberculosis Association, New York, was the principal speaker, his subject being "Adventures in Case Finding". Dr. Kleinschmidt said in part: "A promising field of endeavor is that of searching out early cases of tuberculosis, known as the childhood type, even before there are symptoms or physical signs. This early condition can be discovered only by means of the tuberculin test and the x-ray. Children with the early form of the disease are not necessarily sick and may not even be in danger, but the fact that they have already suffered some damage means that they have been in contact with an active case and this case should be found lest further damage be done."

Dr. Kleinschmidt continued: "The public health nurse and the social worker often become aware of situations in families which justify them in suspecting that there may be a case of tuberculosis in the family. These suspicions should be carefully traced. Every doctor and every clinic should assume the responsibility of examining every member of a family in which a case of tuberculosis has been found. Examinations of employees often turn up unsuspected cases of tuberculosis; these, too, should be followed up.

"With the continued decline in the incidence and death rates of tuberculosis, the possibilities of reducing it to a controllable minimum grow ever more attainable. Yet, as the fight narrows down, it becomes more technically difficult. We have succeeded thus far in discovering the obvious 'carriers'. There are still among us a goodly portion of concealed or unsuspected cases. Has the time not come to begin to clear up every last hidden focus? If the modern search for contacts seems tedious, complicated, and roundabout, our justification is that only by reducing the foci of infection to a vanishing point can we hope to achieve protection against this disease in the same measures as we now enjoy protection against yellow fever."

Dr. Robert B. Kerr, Executive Secretary of the Association, gave a comprehensive report of the year's work. Officers elected were: Hon. John C. Winant, president; Mrs. James W. Remick, first vice president; Dr. Arthur L. Wallace, second vice president; Leonard J. Farrell, third vice president; Hon. Fred H. Brown, honorary vice president; Mrs. L. M. French, honorary vice president; Vaughan Griffin, treasurer, and Dr. Robert B. Kerr, executive secretary. Colonel Robert O. Underwood of Concord was added to the Board of Directors.

THE DANGERS INCIDENT TO ABNORMAL SPEED OF AMBULANCES

While speed and clanging bells may be necessary at times in the transportation of patients by ambulances, the behavior of the drivers seems to be open to criticism in some instances. Conditions in New York have prompted Dr. Charles H. Young of Montclair, New Jersey, to write a letter of protest to the *New York Times* in which he presents a plea for more careful driving and less noise by those in charge of ambulances.

Most everybody concedes the right of way to ambulances but unnecessary usurpation of space and objectionable noise is unwarranted.

Sometimes there is reason for suspicion here in Boston that more care and less noise may reasonably be expected of ambulance drivers.

Reports have been published of accidents caused by ambulances which have changed the beneficent functions of these conveyances to agents of death and it is very generally believed to have been due to careless driving in most instances.

Ambulance drivers seem to be a law unto themselves and take advantage of unusual privileges granted by the police.

The matter of noise of ambulance horns, although not a major problem as compared with steam whistles, does nevertheless grate on sensitive nerves and may warrant some consideration by Mayor Curley's committee for the suppression of unnecessary noise.

CASE RECORDS
of the
MASSACHUSETTS GENERAL HOSPITAL

ANTE-MORTEM AND POST-MORTEM RECORDS AS USED IN WEEKLY CLINICAL-PATHOLOGIC EXERCISES

EDITED BY RICHARD C. CABOT, M.D.
F. M. PAINTER, A.B., ASSISTANT EDITOR

CASE 17411*

ACUTE EPIGASTRIC PAIN AND JAUNDICE

SURGICAL DEPARTMENT

PRESENTATION OF CASE

DR. CHESTER M. JONES: This patient was a man of forty-five who had an essentially negative past history, with the exception of the story that he had had an attack one or two years before coming into the hospital of something that was called bronchopneumonia or serious acute upper respiratory infection, which apparently had no bearing upon the present illness except that he had some distress which was relieved by alkali. That is the only thing that he had in common with the present history. I do not believe it has any relation at all to the symptoms which brought him into the hospital.

Four days before admission, while walking, he suddenly felt a dull griping pain in the midepigastrium without any radiation at all. He immediately took bisodol. The pain disappeared within half an hour. At two o'clock in the morning before admission he had a similar sudden pain. It was rather dull throughout the day in spite of bisodol, rest and fluids by mouth. He thought he vomited a slight amount of water. His bowels moved with Pluto water. He went to sleep without difficulty. At two o'clock in the morning of the day of admission he had severe epigastric pain which wakened him out of a sound sleep. This pain radiated to the flank or at least to the midaxillary line on the left, not to the right at all. It was worse when he was lying on his left side. It lasted until about eleven o'clock in the morning. It was bad enough to make him moan and call a doctor, who gave him hot packs and pantopon with relief. The patient belched a good deal of gas. His bowels moved with an enema given in the afternoon, giving a normal colored stool. At five o'clock in the morning he passed urine, and again at eight o'clock. After that time he noted the urine to be rust colored, i.e., darker than normal. He had a slight chill in the morning but no sweats, and after eleven o'clock there was no chest pain on breathing. He had a slight headache. That was almost the entire story up to the time of admission. I did not see him when he came in. Dr. Bail had followed him for twelve hours or more before admission and felt that he had something pretty acute. As I recall it Dr. Bail was unable to find any particular tenderness. Is that correct, Dr. Bail?

DR. J. WARREN BAIL: Yes.

DR. JONES: During the day he had developed a little jaundice. We were not sure, but it seemed that that was probably correct.

On physical examination he was a well developed and nourished man, a little bit flabby and rather pale, but apparently from indoor life rather than anemia. There was a slight suggestion of icterus in the sclerae. The physical findings were essentially negative except that if one palpated the right epigastrium or towards the midepigastrium there was production of a pain which was felt to the left of the epigastrium over near the nipple line very much like the pain he had had that particular morning and two days before. As a matter of fact the pain radiated up to about the seventh or eighth rib and there was no local tenderness at all in the sense that he felt pain locally, nothing on the right side, and one could not feel the liver or the gall bladder.

On admission he had a temperature of 102°, a pulse of 120, with the respirations up to about 30.

The next morning he still had a temperature; it had come down a little. The pulse was in the 90's. The respirations were 25. Physical examination was essentially the same except that there was no doubt about the jaundice. It was evident that there was something wrong with the biliary tract. At that time the white cell count was 31,000. The urine was positive for bile and showed a slight trace of albumin. Otherwise it was essentially negative.

We all felt that he had gall bladder disease, quite possibly stone, and we were rather surprised that he had never had any preceding attack. Two days after admission he had an icteric index of 65. Six days later the amount dropped to 10 and the van den Bergh was too low to read. During that time the temperature varied from 99° to 102.5°, with two chills on February 7 and February 9 when the rectal temperature was as high as 105.5°. The night of February 9 he complained of dull, rather constant pain between the scapulae. Otherwise there was not much pain. He vomited a bit. He felt very sick and sweated a good deal. The jaundice diminished. One could elicit definite pain by pressing over the liver near the epigastrium, but the pain was almost always towards the left side.

A flat film of the gall bladder and the kidney region was absolutely negative except for phleboliths. A Graham test showed no filling of the

*This report gives the essentials of two discussions, one in Dr. Cabot's Third Year class, one at a conference of the hospital staff.

gall bladder. We did not lay too much emphasis on that because of the jaundice. As a matter of fact the Graham test was done after the jaundice had nearly disappeared, so we felt that it offered fairly conclusive evidence of gall bladder disease.

We carried him along through a ten days' or two weeks' period in order to have the jaundice clear up. When Dr. Young operated at the end of two weeks the temperature had fallen off and the patient was feeling better.

After operation for a period of five days the patient ran an apparently normal postoperative course. There were no chills, the temperature was normal and the pulse was in the eighties. Routine examination of the chest the second day after operation showed that the diaphragm was well up but that it moved. It was hard to know whether there was an area of collapse or whether the diaphragm was high or whether it was a high diaphragm and collapse. Then he began to have chills and fever again. Six days after operation he had the first chill and the next day another. Then the temperature and pulse began to rise and he had the same septic temperature as before. He did not become jaundiced at this time. On February 24 the white cell count, which had dropped to about 11,000, had risen again to 29,000. As soon as he began to have chills again we began to wonder about liver infection. The question was, what type? Was it liver abscess or cholangitis, pylephlebitis or subdiaphragmatic abscess?

Additional x-rays were taken a bit later in the course of the disease when he was running a still higher temperature. The x-ray record is as follows: "The right side of the diaphragm is elevated and indistinct. There is mottled dullness in the right lower lobe. The right diaphragm appears to move fairly well. The left side of the diaphragm is normal in outline, position and excursion. The mottling in the right lower lobe is of a linear character arranged transversely just above the dome of the diaphragm. There is also a hazy area of dullness in the right first interspace. The lung fields are otherwise clear. The heart shadow is not definitely displaced. There is no visible gas within the liver area, no definite collection of gas below the right diaphragm or along the lateral aspect of the liver. The findings are consistent with partial collapse of the right lower lobe."

We felt that he simply had a very high diaphragm which moved with respiration with partial collapse at that point. Because of a continued septic temperature, however, we tried to find out a little more about him. Throughout this period we did a series of liver function tests to see how much dye retention there was. The first time, ten days after operation, he retained 55 to 60 per cent of the dye in spite of the fact that there was no demonstrable jaundice whatever. During the next three weeks the dye retention dropped from 55 to 20 and was maintained there. He certainly had a steady figure of dye retention at a high level. It seemed obvious that we were dealing with an intrahepatic process as the primary disease. That is the only laboratory finding that aided a diagnosis. I had a look at him by bright daylight and he was at no time more than very slightly icteric. The liver never became palpable. He did not have tenderness. The only signs that were of importance were the persistent high diaphragm which always moved with respiration and the signs above consistent with collapse or, as we went along, with fluid.

At this point the signs of fluid in his chest were sufficient to warrant a chest tap. It gave 75 cubic centimeters of hazy straw colored fluid with 37,360 red cells and 9,840 white cells by count. There were no organisms. The lymphocytes were low, 50 per cent. There was no obvious pus. Cultures were negative. We felt that it was irritation fluid due to something below the diaphragm.

The x-ray report after that is as follows: "There is now evidence of a small amount of fluid at the right base. There is also mottled dullness above the diaphragm at the cardiophrenic angle. No visible gas is seen in the region of the liver below or above the diaphragm. The diaphragm still moves fairly well with respiration although it is definitely limited in excursion."

We felt that with these signs of fluid above the diaphragm, with this septic temperature, with a dye retention indicating definite liver disturbance, we had a right to consider that we might have here a subdiaphragmatic abscess which had occurred from intrahepatic infection or a liver abscess as such. I do not think any of us felt very strongly in favor of liver abscess, but we felt that operation should possibly be considered.

Dr. Young was away at that time and Dr. Churchill followed the case with me. At this point he did a rib resection prior to a subsequent exploration of the liver below the diaphragm. The patient was cyanotic for a while because of a moderate pneumothorax, but tapping took off the excess air. He stood the operation remarkably well. He ran a septic temperature for nine days following operation, from the sixteenth to the twenty-fifth. At about this point the chest signs failed to show more involvement above the diaphragm. The diaphragm still moved. We wondered whether, possibly, there was infection of the fluid above the diaphragm. Dr. Churchill tapped at that time and obtained a dry tap. Even then we felt that there was no evidence of infection above the diaphragm. We decided to proceed with the second stage of the operation at that time.

The liver was exposed and explored thoroughly without showing any evidence of subdiaphragmatic or intrahepatic abscess. Six days later he became definitely more toxic, the signs in the right chest became more marked and he apparently had pneumonia by the signs above this area of collapsed lung and fluid. We never were absolutely certain as to how to interpret our chest findings during the latter part of the disease.

He died five days after the third operation and seven weeks after admission.

Clinical Discussion

Discussion in Dr. Cabot's Class

Notes on the History

Dr. Richard C. Cabot: How seldom we find people with pain in the left upper quadrant! We less often have pain there than in any of the other divisions of the abdomen. I suppose it should be connected with troubles of the spleen and of the pancreas (acute pancreatitis); of the splenic flexure of the colon sometimes. We see it also in some cases of ordinary indigestion.

The yellowness of the skin plus the fact that he has had some pain in the midline certainly suggests gall stones. I discussed a case the other day at a medical meeting in which we had pain in the left hypochondrium, I do not know why, from what turned out to be gall stones.

We have sharp attacks of pain, one of them rather characteristic of gall stones, and apparently jaundice and what may be bile in the urine. So I should say gall stones is the best guess up to this point.

Notes on the Physical Examination

Ordinarily when we get pain referred across the upper abdomen in that way it means trouble in the intestine. Pressure upon one point in the intestine causes pain in the intestine in another part.

The fact that the urine was bile-tinged is important to us, because you remember we had only a suggestion of jaundice in the sclerae.

Dr. Aubrey O. Hampton: We could see the kidney shadows by hunting and I thought that they were probably not abnormal. These are the loops of small bowel at the left side of the abdomen usually taken to be the jejunum because of their shape. We could not decide that that indicated obstruction, because we often see gas in the small bowel in bedridden or sick patients. The Graham test was positive,—no shadow at all. The liver margin is visible in one of these films in about the usual position, perhaps a little lower. We interpret all of our Graham tests as positive for gall bladder disease when we do not see the gall bladder. It may mean disease of the bile ducts or the liver or retention in the stomach.

Dr. Cabot: Gall bladder disease, then, of some kind, the gall bladder not functioning properly. That is added to the knowledge we had before. There perfectly well might be gall stones there, for x-ray shows them in only 20 to 25 per cent of the cases where they are present.

Did you have any films of the right base?

Dr. Hampton: Not at that particular time. All my chest films are postoperative.

Dr. Cabot: We come to the operation, and we must make a preoperative diagnosis. Let us start with the things we know best. We know that he has obstructive jaundice, not hemolytic jaundice. Something is blocking the outflow of bile but not blocking it all the time. It would be very unusual, for instance, in cancer of the pancreas to see bile in the urine clear up as it has here. With stone, on the other hand, intermittence of blocking is common. We have something that diminishes the function of the liver. But anything that blocks the outflow of bile will diminish the function of the liver. That does not tend to help us in deciding what the trouble is. Something is interfering with the function of the gall bladder. We have something which produces a high white cell count, fever and chills, and that certainly cannot be merely a stone or merely malignant disease. We must suppose some infection behind whatever is causing the block. That infection might be present with malignant disease. It is more likely to be present with stone. I should say then that the best diagnosis is gall stones with cholangitis spreading up into the liver. Whether the liver got to the point of abscess or not, whether the infection went into the portal vein with pylephlebitis, we have no way of saying. There is no evidence of ascites or of blockage of the portal system, so I should think we are safest in saying gall stones with cholangitis, presumably cholecystitis. We suspect also, as we always must in these cases, subphrenic abscess. That pain between the scapulae, of course, makes us think of it. We have no x-ray relative to that, have we?

Dr. Hampton: We did not examine above the diaphragm before operation.

Dr. Cabot: So we have nothing against it or for it either. I do not see how it can be ruled out. The evidence is of biliary sepsis, the block seeming to be due to sepsis rather than to malignant disease.

I think I will make a preoperative diagnosis of gall stones in the common duct with cholangitis or cholecystitis or both.

(First operation.)

Dr. Cabot: That film does not show subphrenic abscess, does it?

Dr. George W. Holmes: I think we should have to have actual fixation of the diaphragm before we could say that.

Dr. Cabot: The diaphragm might be high because of the liver's being big. I do not see

that we need to add anything to the supposition of sepsis in the liver, which has been in our minds already.

DR. HAMPTON: This is a film taken immediately after operation, when the chest signs were first noticed. These are the linear bands of dullness that we described above the diaphragm. This is the questionable area in the right first interspace. This much we were certain about, that there was definite fluid in the right base and elevation of the right diaphragm. We were also certain that the diaphragm moved with respiration, although it was definitely limited in excursion. We did not see any gas below the diaphragm at all.

DR. CABOT: Is the absence of gas a point against subphrenic abscess?

DR. HAMPTON: Yes, but subphrenic abscesses are often present without gas formation. If gas is present then the diagnosis is almost certainly correct. This film was taken for the purpose of demonstrating gas. This mottling we thought to be above the diaphragm. These lines of dullness above the diaphragm we believed were due to atelectasis of the lung. This is not like massive collapse but is probably due to pressure.

DR. CABOT: That is an extremely high diaphragm, isn't it?

DR. HOLMES: Yes. This film was taken with the tube low down, and that tends to throw the diaphragm up. Of course this shadow represents the extreme dome of the diaphragm. Whenever we have a ruptured viscus or an infection with a gas-forming bacillus we can demonstrate a fluid level. Of course a subdiaphragmatic abscess that did not have gas-forming bacillus would not give us that picture.

DR. CABOT: I was thinking that if it is connected with the gall bladder and therefore indirectly with air you would get gas in that way. So I am wondering whether gas would not be evidence still of subdiaphragmatic abscess aside from the bacillus.

DR. HOLMES: No, I do not think I have ever seen a case where there was indirect communication between the gastro-intestinal tract and a subdiaphragmatic abscess with the formation of gas.

DR. CABOT: I have seen a number of operations in this region when they thought they were going in above the diaphragm and went below.

The tap fluid is not pus. It is clear fluid apparently. It may be on the way towards empyema, but it has not got there yet.

The diaphragm was limited in excursion. We are getting nearer to the question of subphrenic abscess, aren't we?

DR. HOLMES: An accumulation of fluid above the diaphragm that is not pus makes one suspect pus below the diaphragm provided there is nothing in the chest to account for it.

(Second operation.)

DR. HAMPTON: This film was taken a week after the operation. Now we do not see the outline of the heart, the diaphragm or any of the lung on the right side. There is homogeneous dullness from top to bottom, from the heart and trachea to the midline.

DR. CABOT: Am I right in supposing that means pneumonia and not fluid?

DR. HAMPTON: I interpret that as fluid and collapse of the lung. If it was fluid alone without collapse the heart would be displaced. If we have fluid with collapse the heart stays in the midline. Fluid tends to push it to the left and collapse tends to push it to the right. When both are present the heart stays in normal position.

(Third operation.)

DIFFERENTIAL DIAGNOSIS

DR. CABOT: What should we expect will be found at autopsy? It all started, of course, with this biliary infection for the origin of which we have no evidence yet in any stone, but which I think must have gone beyond the gall bladder into the liver itself and beyond the liver to the space between the liver and the diaphragm and beyond the diaphragm into the chest, a series of steps ending in empyema, which I think Dr. Mallory will find. Why they did not drain the empyema I do not see. I do not believe it would have saved him at this stage of the disease. There is a good chance of multiple abscesses of the liver. The fact that they could not get pus on tapping the liver does not prove that it was not there. On the other hand we do not need to suppose it. The essential thing is biliary sepsis with extension into the pleural cavity and death from sepsis.

DISCUSSION AT STAFF CONFERENCE

DR. JONES: The surgical findings at the time of the first operation were rather interesting. It was a very difficult problem to explain how the subsequent events developed. The findings at the time of the thoracotomy were interesting because at no time could we demonstrate that the liver was any more abnormal than it was the first time we examined it. Another interesting thing is the fact that he never showed more than the faintest degree of clinical jaundice after the initial attack.

DR. JAMES H. MEANS: Why didn't you consider pancreatitis at the time he first entered the hospital,—or did you?

DR. JONES: There was no tenderness over the body of the pancreas. We thought of it enough to determine that. I do not think we entertained the idea very seriously.

DR. EDWARD L. YOUNG, JR.: This has been to me a very interesting case. We did consider pancreatitis very definitely, but the pain was

not over the pancreas. It was higher, and there was no tenderness over the pancreas. Just from a diagnostic viewpoint I think it is worth mentioning that there are enough cases where the symptoms are never related to the gall bladder—neither pain nor tenderness over the gall bladder—where the pain is either definitely left-sided, either just at the costal margin or just above it, or else is purely a right scapular pain, so that the absence of gall bladder pain or tenderness does not in any sense of the word rule out gall bladder disease or seem very strange to us now.

The operative findings are: first in regard to the liver; there was the slight cobwebby appearance immediately adjacent to the gall bladder, which we always associate with hepatitis accompanying cholecystitis, particularly since Graham called attention to that almost constant finding. But the liver did not seem otherwise very abnormal. We felt it very carefully to see if possibly there was a little thickening of the capsule, but it was an essentially normal liver in size and freedom from abnormal color and adhesions.

In uncovering the gall bladder, which was a thickened, shrunken old damaged gall bladder, we discovered a fistula between it and the duodenum. In my experience that has always done two things. It has been a safety valve so that the patient has not had symptoms commensurate with the amount of inflammatory process that has gone on at various times. That you may say is a good thing. On the other hand I think it has been a very bad thing, because nearly all the patients in whom I have seen this fistula have been patients in whom the disease had gone on to a considerable amount of damage and I believe if they had had the symptoms that they should have had, they would have come to operation at a time when there would have been less damage. There was no stone. I have no doubt that he may have had a stone which went through the fistula. The removal of the gall bladder was not difficult. Exploration of the common duct showed it to be essentially normal. The papilla opening into the duodenum was of good size. I put a fairly good-sized catheter through the common duct down into the duodenum to be sure that there was no obstruction and that he had good drainage, because Dr. Jones and I spoke at the time as to whether the common duct ought to be drained. It seemed as though with the liver opening into the duodenum he had good enough drainage there. That is the only thing in retrospect which may perhaps be instructive. Deaver in a recent article has emphasized the need of prolonged drainage of the common duct in cases of damage following cholecystitis. What I should like to ask him or anyone else who is a strong advocate of his theory is, do you know the signs that will tell you when such draining is necessary? This man seemed to have adequate drainage into the duodenum. When I have had occasion to pull out a T tube I have wished very strongly that I had not put it in.

There is one thing we did not do, and I see no reason why we should have done it. No liver function was done previous to operation. In cases of doubtful diagnosis and in cases that are pretty sick it has always been our custom to do it. This man was not very sick. We should perhaps have said, "How much liver damage has he?" Perhaps we should have done common duct drainage.

The liver function did improve however. For the first six days of apparent benefit he seemed to be going along normally. Then there was recurrence of chills and fever. The thing that was of interest was the normal appearance of the liver with a few adhesions, so that at the time of operation we felt that the sepsis was not there, then because of the subsequent developments here the apparent ability of the sepsis to go into the subdiaphragmatic space and go with as little evidence of damage as there was there. I still do not know whether I am going to drain the next case like this with T tube drainage or not.

DR. TRACY B. MALLORY: Dr. Holmes, will you show us the x-rays?

DR. HOLMES: They are not particularly interesting. I did quite a series of films of the gall bladder, all of which were negative. You can see the edge of the liver and the kidney. A normal gall bladder is shown. Whether that is due to failure of the liver to function or failure of the gall bladder to fill I do not know. They do not give us any evidence as to whether or not the drain was in the liver or the gall bladder.

This film of the abdomen shows an unusual amount of gas in the bowel, and some of it I think is in the small bowel. It is always interesting to notice the amount of gas in the small bowel. One condition in which it occurs is peritonitis. The average normal patient does not show it. This film was taken because of a question of gas below the diaphragm. There is no evidence of free gas below the diaphragm in the film. It does show high position of the diaphragm and dullness above.

Then we have a group of films to show the condition in the chest. You see the normal position of the diaphragm on the left, the high position on the right and the obliterated costophrenic sinus with general haziness above the diaphragm and mottling in the lung. An examination of the respiratory excursion of the diaphragm is important in this case. Was that done clinically or by x-ray?

DR. JONES: It was done both ways and we felt that it showed pretty good evidence of a subdiaphragmatic abscess.

DR. HOLMES: We have been watching this sign for years, and we think that if the dia-

phragm moves there is no pus immediately below it, between the diaphragm and the liver.

DR. EDWARD D. CHURCHILL: There are two important physical findings that point toward a collection of pus below the diaphragm. One of these has been referred to by Dr. Holmes—the high and fixed position of the diaphragm. The other is a collection of fluid in the chest described by Dr. Jones as of the "irritative" type. This means that blood plasma has escaped from the dilated capillaries surrounding an area of inflammation. It is interesting to note that this patient had fluid in the chest, the finding I have always considered to be a later and more positive sign of subphrenic complication than a high and fixed position of the diaphragm. We felt before operation that the patient had an infection in his liver; that he probably did not have a large collection of pus in the subphrenic space, but that he certainly had subdiaphragmatic peritonitis or an irritation of the peritoneum coming from a liver abscess or from pylephlebitis or cholangitis. To my mind the absence of jaundice was somewhat against a diffuse cholangitis, which should be accompanied by obstruction of the ducts. My preoperative diagnosis was therefore pylephlebitis with localized abscess formation pointing on the under surface of the diaphragm.

A low approach at the costal margin is sometimes adequate for drainage of a subphrenic abscess in a clearly cut case. At times drainage can be accomplished in one stage. I think in a case of this type one must be prepared to explore by direct vision and if necessary to tap with a needle the upper surface of the liver. I think a low approach here with blind exploration of the upper surface of the liver would have been inadequate, because we did not believe he had a frank subphrenic abscess.

Sections were removed from the ninth and tenth ribs under local anesthesia. By a technical mishap an opening was made in the pleura and a small amount of air entered the pleural cavity. By pressure the pleura was brought into contact with the dome of the diaphragm and a sponge was packed against it, closing the opening.

After the patient was sent to his room he showed signs of a partial pneumothorax, so the chest was tapped and 200 cubic centimeters of air withdrawn. The pack was left in place until adhesions were formed between the diaphragm and the pleura.

At a second operation the diaphragm was opened through the window formed at the first operation. There were fresh adhesions between the upper surface of the liver and the dome of the diaphragm, well over towards the midline, some distance from the pack. They were adhesions which can only be described as inflammatory perihepatitis and which in themselves would be adequate to account for the fluid in the chest directly above. Exploration of the liver showed no signs of softening. Tapping the liver at several points failed to reveal any pus. A sponge was inserted in the subphrenic space for drainage. The pleural cavity was not entered at the second operation.

DR. BETH VINCENT: I saw the man in Dr. Young's absence. He was convalescing from operation and had again developed chills and fever, and there was a question whether sepsis in the field of the operation could be the cause for this. There evidently was no backing up of drainage. It seemed to us that a cholangitis present at operation had for some reason undergone an exacerbation, but that no operative procedure was indicated unless the infection in the liver developed later an abscess pointing on the surface of the liver.

DR. GERARDO M. BALBONI: I do not seem to see why there was sufficient indication for the first operation, the cholecystectomy.

DR. JONES: He had had an attack of pain, fever and chills and had been deeply jaundiced for about a week. We felt that that was satisfactory indication that he had gall bladder disease.

DR. FREDERICK T. LORD: Regarding the diagnosis of subdiaphragmatic abscess, there is a small group of cases with marked elevation of the diaphragm without complicating pleural effusion and with physical signs similar to those with an accumulation of fluid in the pleural sac. The diagnosis is difficult on the clinical aspects alone. One suggestive finding is that the heart is less displaced than might be expected with a pleural effusion of equal size, and another is the presence of relative resonance in the paravertebral region on the affected side, but the differential diagnosis of pleural effusion and subdiaphragmatic abscess can usually be made with certainty only by x-ray examination. The distinction is of extreme importance, because incision and drainage of subdiaphragmatic abscess through an intact pleura may result in serious consequences on account of immediate collapse of the lung.

CLINICAL DIAGNOSES (FROM HOSPITAL RECORD)

Lobar pneumonia, right lower lobe.
Cholecystitis.
Cholangitis.

DR. RICHARD C. CABOT'S DIAGNOSES

Biliary sepsis with extension into the pleural cavity.
Empyema.
Possibly multiple abscesses of the liver.
Terminal septicemia.

ANATOMIC DIAGNOSES

Cholecystitis.
Pylephlebitis.
Empyema, right.
Collapse of the upper lobe of the right lung.

PATHOLOGIC DISCUSSION

DR. TRACY B. MALLORY: This case was extremely puzzling during life and it puzzled us a great deal at autopsy. I think our first conclusions were entirely wrong.

We found two things of major importance. One was a series of branching abscess cavities scattered through the liver. The liver was not enlarged. None of the abscess cavities came definitely to the surface. It was not until we cut into the liver and found long tubular cavities following the general outlines of the portal tree that we found anything definite. In these branching cavities we found pus which showed a distinctly yellow color suggesting bile. We thought at the time of the autopsy that these were dilated bile ducts. On more careful dissection of the liver it became apparent that the process was not in the bile ducts but in the portal vein, really a pylephlebitis. This is the second case in the past few months in which pylephlebitis has appeared as a complication of cholecystitis. At the time of autopsy there was no pus beneath the dome of the diaphragm. There were only a few fibrous adhesions similar to those which Dr. Churchill mentioned as being found at the third and last operation.

The pleural cavity appeared to be separated into two parts. The upper part showed a frank empyema with about 800 cubic centimeters of pus and with complete collapse of the right upper lobe. The lower portion of the pleural cavity was partially separated from the upper by dense fibrous adhesions and was free from pus. The lung underneath the empyema cavity was collapsed and showed no pneumonia.

This microscopic slide is from the liver, and includes one of the various ramifications of the abscess cavity. The central space is surrounded by a mass of chronically inflamed granulation tissue containing a great many lymphocytes and not many polynuclears. The bile ducts seen in its wall are essentially normal in character. No vein is to be made out in the whole portal area, thus confirming the conclusion eventually derived from study of the gross specimen that this central abscess cavity really consists of a greatly dilated portal vein.

DR. YOUNG: If that is true, it seems to me to confuse the picture rather than clear it. Is spontaneous pylephlebitis a recognized condition? We must assume that the same condition existed before operation that existed after it. Or would you say that the cholangitis had cleared up and the pylephlebitis had taken its place?

DR. MALLORY: There is very little evidence of cholangitis I should say.

DR. YOUNG: In other words, there was a pylephlebitis which continued afterwards.

DR. MALLORY: Yes, I think it probably existed before operation.

A PHYSICIAN: Then it is difficult to explain the period of wellbeing after operation.

DR. CHURCHILL: I believe that the gall bladder was described as being turned downward and backward where it came into association with the portal tree.

DR. YOUNG: Yes. The cystic duct for at least an inch was in contact with the common duct.

DR. HOLMES: Have you a definite opinion as to how the infection reached the chest?

DR. YOUNG: No, I have not. It seems to me that the physical findings in your whole series of films show no possibility that empyema was present before the last operation.

DR. MALLORY: It must have been subsequent to that. I think in all probability a small pulmonary abscess, embolic in origin, perforated through the pleura. That is the commonest type of empyema we find postoperatively.

DR. JONES: Would it not have been easy for the hepatic vein to thrombose and emboli be carried into the circulation?

DR. MALLORY: Yes, I think that is quite possible. On the other hand if there were any extensive involvement of the hepatic veins I should expect to have found multiple abscesses in the lungs. It is comparatively rare to find a single postoperative lung abscess. One ordinarily finds a dozen.

DR. HOLMES: This rather confirms the signs that we thought of as being reliable in subdiaphragmatic abscess. The first step is a high fixed diaphragm, then the occurrence of some edema in the lung which later on leads to accumulation of fluid in the chest.

A PHYSICIAN: Have you any cultures of the fluid from the gall bladder?

DR. MALLORY: Unfortunately we did not do cultures on that fluid. Cultures from the empyema cavity showed a multiplicity of organisms. They were not very helpful.

DR. JONES: I think the point that was raised in regard to the difficulty of explaining the period of wellbeing after operation is interesting, because the white cell count dropped so that he had a practically normal blood for several days, then apparently a lighting up of the process. I think it is rather unusual to see a patient without jaundice with so much involvement of the liver. We have found at least two cases of acute yellow atrophy without any jaundice whatever. There was one case recently on the surgical service with diffuse hepatitis and absolutely no jaundice. That picture must be very uncommon. And I think it is of some in-

terest that we found this constant evidence of damaged liver. Certainly we did not know how badly damaged the liver was. We realized that all the time, but felt that there was sepsis and that we had a chance of finding it.

CASE 17412

RETROPERITONEAL ABSCESS WITH JAUNDICE

Surgical Department

Presentation of Case

Dr. John D. Stewart*: A sixty-two year old unoccupied Italian entered the Emergency Ward with the complaint of generalized abdominal pain. It was difficult to obtain a satisfactory history from the man himself because he spoke very poor English and the relatives with him were unacquainted with the symptomatology.

In the past history there were no particular details of interest except that he took alcohol to excess and also for a good many years had had a bilateral hernia for which he had worn a truss. During the past year his health began to fail, but up to the past year he had noticed nothing unusual. At times during the past year he had had periods of diffuse abdominal pain associated with vomiting and coming on after alcoholic bouts. For several months he had limited himself to a milk diet because he found that all other foods disagreed with him.

The present illness proper began about two weeks before admission and was similar to the previous attacks which followed his alcoholic bouts. He had generalized abdominal pain and shortly afterwards vomited. This pain persisted up to the time of admission. About five days before admission he vomited several times, producing greenish material in small quantities. During the month prior to admission he had lost about 20 pounds in weight. His bowels had moved every day as usual.

On admission to the Emergency Ward it was obvious that the man was very sick. There was a faint icteric tinge to the skin and sclerae. The heart was somewhat enlarged, the sounds poor. A systolic thrill was described, also an apical systolic and an apical diastolic murmur. The blood pressure was 110/70. On examination of the abdomen he was found to have diffuse abdominal tenderness, a suggestion of fluid wave and moderate distention. The leukocyte count on admission was 35,000, the temperature normal, the pulse 110. The urine was negative except for traces of bile. He had large bilateral hernias, but on the right was a tender swelling which extended into the scrotum and the skin over it seemed warm and reddened. That led to the diagnosis of strangulated hernia being made, and he was operated on at once.

When the usual oblique inguinal incision was made there was a gush of greenish odorless fluid from the inguinal canal. The spermatic cord seemed black and necrotic. The testicle seemed to be necrotic also, so a right orchidectomy was done. He had a small oblique hernia on the right. The sac was filled with inflamed adherent omentum. When the operator explored the adjacent peritoneum he found the intestines matted together about the internal ring. There was also a rather profuse flow of thin grayish fluid from the peritoneal cavity through the wound. The postoperative diagnosis was torsion of the testicle and cord on the right and general peritonitis. The wound was drained.

Following operation the patient did fairly well for a few days. His distention subsided as large quantities of fluid drained from the wound. His appetite improved. There was no vomiting. The bowels moved daily. His temperature and pulse remained elevated however, the temperature irregularly so and the pulse fairly steadily, about 120. The leukocyte count remained elevated also. The questionable icterus noted on admission deepened to definite jaundice, and the icteric index was 45 the day after operation. As the distention subsided there could be felt across the upper abdomen a rather firm irregular mass with rather poorly defined border. This was taken to be liver. A medical consultant made a diagnosis of cirrhosis of the liver and instituted treatment appropriate for that. The assumption was that the patient had ascites with cirrhosis. A liver function test was done which showed 20 per cent retention of dye in thirty minutes. About ten days after operation the patient began to vomit and vomited persistently until death.

About two weeks after operation during one of the daily routine examinations fullness and definite crepitation was found in the left flank. When this region was pressed on there was a gush of fluid and air from the wound in the right groin. It was hard to account for this unless he had an abscess.

He was operated on the next day under local anesthesia. A large abscess cavity was found which seemed to lie in the retroperitoneal region. It was filled with thick pus and necrotic tissue. The patient showed very little improvement following operation. His vomiting persisted and came to amount to almost constant regurgitation of small amounts of greenish fluid. On the nineteenth day after admission he died.

Dr. Chester M. Jones: Did the jaundice increase up to death?

Dr. Stewart: Before death the jaundice had almost disappeared.

An Interne: How many days before death was the liver function test done?

Dr. Stewart: Ten days.

Dr. William B. Breed: Was any bacterio-

*Assistant resident on the West Surgical service.

logic work done on the fluid from the abdomen or from the abscess?

DR. STEWART: The original culture showed staphylococcus aureus.

CLINICAL DIAGNOSES

Strangulated inguinal hernia.
Peritonitis.
Cirrhosis of the liver.

ANATOMIC DIAGNOSES

1. *Primary disease.*

Chronic pancreatitis.

2. *Secondary or terminal lesions.*

Necrosis of the retroperitoneal tissues.

PATHOLOGIC DISCUSSION

DR. TRACY B. MALLORY: This was a very blind case. I do not believe anyone could possibly have made the diagnosis. What we found at autopsy apparently of chief significance was a huge retroperitoneal area of necrosis looking a good deal like an abscess, but apparently sterile, which extended up as far as the pancreas, down into the pelvis, out into the groins, and as you heard from the first part of the story, into the scrotum. The pancreas itself was a little swollen but not superficially very abnormal in appearance. All around the edges of that dissecting area of necrosis, however, there were foci of fat necrosis such as we see in pancreatitis, and on section and microscopic examination a diffuse pancreatitis was found. I think that unquestionably is the primary disease.

The liver itself was small rather than large. The mass felt was infiltration of the root of the mesentery overlying the pancreas. So far as I can remember this is a unique case of pancreatitis, the first evidence of which appeared in the scrotum.

DR. BREED: Was there any mesenteric thrombosis?

DR. MALLORY: The gut was entirely negative.

DR. JAMES H. MEANS: Was the liver cirrhotic?

DR. MALLORY: No.

DR. MEANS: Was the fluid in the belly inflammatory?

DR. MALLORY: I think that was mechanical peritonitis rather than infectious.

DR. MEANS: This case reminds me of one I saw a year ago in which the diagnosis of cirrhosis was first made when the man had an operation for hernia and a gush of fluid came from the wound.

DR. MALLORY: The gall bladder had a few adhesions on the surface between it and the colon, also a few running over the stomach. The walls were not thick and there were no stones. The bile ducts were entirely negative. There was no structural cause for jaundice at all. Possibly in the early stages of the pancreatitis the head of the organ may have been swollen and may have pressed on and narrowed the common bile duct where it passes over the head of the pancreas. There was no obstruction at all at autopsy.

DR. JONES: Is it not true that the cases of pancreatitis which show jaundice are usually the ones that are subacute, not usually fulminating cases, the ones on which the surgeons make the diagnosis and operate?

DR. MALLORY: I do not remember about that. It sounds reasonable.

DR. JONES: Some of them are intensely jaundiced.

DR. MALLORY: I think it is worth while to remember the way in which these sterile abscesses develop and dissect their way into peculiar areas. We were speaking at the last conference of cases in which they occasionally work out at the back and point over the kidney and may be mistaken for perinephritic abscess. This one finally made its way out to the scrotum.

DR. BREED: This reminds me of a case I saw some time ago. The patient was treated for bilateral inguinal hernia for some months. At autopsy there was found to be bilateral psoas abscess working down from a tuberculous vertebra.

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A NEW MEDICAL SCHOOL FOR BOSTON

IN these days when there is a great demand for medical education in the United States as indicated by the number of applicants for admission to medical schools here and by the number of American students who enter foreign medical schools, and when there appears such a considerable number of applicants who are rejected, it is not surprising that projects should be undertaken to give increased opportunity for the study of medicine.

In recent years a few new medical schools have been opened and have attracted widespread attention by their ambitious projects and the munificence of the donors who have made the creation of these new schools possible. Therefore, the announcement of the opening of a new school of medicine in Boston attracts considerable attention and authoritative statements concerning the institution are awaited with great interest.

The new school which proposes, according to its prospectus, to give instruction in medicine in the state of Massachusetts and to confer the degree of doctor of medicine in another state, Rhode Island, presents an anomaly among educational institutions. One scans the prospectus in vain for some indication of the financial backing that will enable it to carry on what is generally regarded as one of the most expensive forms of education. Medicine, of course, with its laboratory branches as an essential part in the curriculum, cannot be studied by correspondence, and accordingly the prospectus gives no suggestion of education "at a distance".

Whether the institution can or cannot succeed in its attempt at this time when medical education is no longer regarded in casual fashion and the conferring of the medical degree is no longer a privilege to be obtained merely for the asking, time alone can tell. It would be well for candidates for the medical degree to hesitate before investing in a course of study in an institution that occupies such an anomalous position, until the institution has given some evidence that it will be able to carry out its ambitious project. The very attempt of such an organization without visible means of support to establish itself in this Commonwealth, suggests the wisdom of placing with some department of the state government, the responsibility for seeing that an educational institution chartered by the state fulfills in a reasonable manner its pretensions.

With reference to the conferring of certain academic degrees this question is of relative insignificance but the degree of doctor of medicine is, on account of the statutes concerning the practice of medicine, of a certain commercial value. There are laws of the Commonwealth concerning the quality of some commercial products. These products are tested and if they do not conform to the standard their sale is forbidden. There should be a statute concerning the quality of the degree of doctor of medicine. It should signify a certain adequateness of preparation for the practice of medicine. It may be objected that the examination given by the Board of Registration in Medicine is an adequate test of qualification for the practice of medicine. At present the examination should not be so regarded. The restricted examinations which are practicable under the present law are not adequate. The test of qualification is whether the individual actually does practice medicine with a reasonable competence. Examination to test adequately this qualification would require more time and involve more expense than the law now makes practicable. It is true that the law says the Board may set whatever examination it sees fit. The setting and carrying on of examinations adequate to determine fitness of candidates for the practice of medicine would involve an expenditure of time and money for which provision is not made.

The number of candidates to be examined involves so great an amount of time that such examinations would not be practicable under the present law.

It has been claimed that the examination should be the only test for fitness to practice. If this were true, the present law certainly shows discrimination, which may be regarded as unfair, under this contention. The law requires that the candidate be at least 21 years of age, of good moral character, and have received the degree of doctor of medicine from a school which is legally chartered and authorized to confer such a degree and which actually gives four annual courses of at least 36 weeks each. Thus there are four other tests beside the examination by the board. There is nothing in the statute that disqualifies a degree conferred without appropriate educational deserts and merely bought and sold for a price. This problem, concerning which awareness has risen above the threshold of consciousness in most states except Massachusetts, has been met in these states by creating some kind of supervision and control of medical schools. This is not to restrict lateral or upward expansion but to prevent degradation into a commercialization which was rife thirty years ago. It is to be hoped that public opinion may become informed and effective in clearing the name of Massachusetts from the derogatory imputations for which the present law permits justification.

THE OPINION OF THE SUPREME COURT IN THE CASE OF GEORGE J. OTT vs. BOARD OF REGISTRATION IN MEDICINE

THE opinion of the Supreme Court (Full Bench) in the case of George J. Ott vs. Board of Registration in Medicine is printed in full elsewhere in this issue of the *Journal*. Perhaps comment is not necessary as Chief Justice Rugg's phrasing is elucidatory and clear, but the importance of the opinion makes reference to it not inappropriate. The decree of the single Justice is sustained on the ground that the Board abused its discretion in unreasonably restricting cross-examination of witnesses appearing before it. On this point the Board might well have been condemned in even more forceful language as the right of reasonable cross-examination is fundamental, and restriction of the right should be scrutinized with the utmost care. But the upholding of the decree reversing the decision of the Board makes further verbal condemnation superfluous. The right to cross-examine may be abused but so may be discretion as to restriction. It may be said for the Board that mastery of Trial Evidence is rarely attained even by a legal expert in a lifetime. It is a field for continuous research.

On other points the Board is supported by the opinion, and adjudication as to the nature of the proceeding by the Supreme Court is important. The statute says it is to be a "revision", so that according to the adjudication there is to be one and only one hearing on the facts, namely that before the Board. The Board may hear and re-hear, it may try and re-try, but in the ordinary sense of "appeal" as retrial on the facts by a higher tribunal, there is no appeal from the Board. Further, quoting from Dugdale vs. the Board, "The degree of credibility to be given to the witnesses is with the Board." The decision of the Board may be reversed only if it is "clearly wrong", in the light of the evidence presented at the hearing, a proceeding already concluded, or because of irregularity of procedure, or if prejudice is shown. "It should not be reversed because the reviewing magistrate may feel that he would have decided the matter differently on the evidence."

Furthermore, objection to the decision on the ground of incompetence of "unreliable testimony of an employee of the State police" is held to be invalid. The opinion reads "Testimony of the nature of that given by the witness Warner was competent as has been decided many times although it should be examined with great care."

If one thinks of law as a sort of living growing organism, the opinion must be regarded as an evidence of distinct progress.

This decision will be of assistance to the Board in its future deliberations.

THIS WEEK'S ISSUE

CONTAINS articles by the following named authors:

SCUDDER, CHARLES L. A.B., Ph.B., M.D. Harvard University Medical School 1888. F.A.C.S. Consulting Surgeon, Massachusetts General Hospital. Chairman of Fracture Committee, American College of Surgeons. Address: 144 Commonwealth Avenue, Boston. Associated with him are:

HARMER, TORR WAGNER. B.A., M.D. Harvard University Medical School 1907. F.A.C.S. Member of Fracture Service and Chief of Service, Surgical Outpatient Department, Massachusetts General Hospital. Instructor in Anatomy, Harvard University Medical School. Address: 416 Marlborough Street, Boston. And

THORNDIKE, AUGUSTUS, JR., M.D. Harvard University Medical School 1921. F.A.C.S. Junior Assistant Surgeon, Children's Hospital, Boston. Assistant Surgeon, Milton Hospital. Assistant in Surgery, Harvard University Medical School. Address: 319 Longwood Avenue, Boston. Their subject is "The Fracture Exhibit at the 150th Annual Meeting of the Massachusetts Medical Society." Page 703.

CABOT, HUGH. A.B., LL.D., M.D. Harvard University Medical School 1898. F.A.C.S. Surgeon, Urologic Department, Massachusetts General Hospital 1910-19. Professor of Surgery, University of Michigan 1919-30. Professor of Surgery, University of Minnesota Graduate School 1930-. Surgeon, Mayo Clinic 1930. His subject is "The Treatment of Exstrophy of the Bladder by Ureteral Transplantation." Page 706. Address: Mayo Clinic, Rochester, Minnesota.

WOODBRIDGE, PHILIP D. A.B., M.D. Harvard University Medical School 1921. Anesthetist, Lahey Clinic. His subject is "Progress in Anesthesia in 1930." Page 712. Address: 605 Commonwealth Avenue, Boston.

MISCELLANY

THE INTERNATIONAL UNIVERSITY: COLLEGE OF MEDICINE AND SURGERY

There has recently appeared a prospectus of a medical school that is new in Massachusetts, namely, the College of Medicine and Surgery of the International University, 510 Columbus Avenue, Boston, Mass. According to the statement in the prospectus, the activities of this college are to be carried on in Massachusetts under authorization given The Progress Alliance, incorporated under the laws of Massachusetts, and the International University, incorporated under the laws of Rhode Island. The former corporation was established in 1910 "for the welfare of humanity, education and general progress" and it was empowered to engage in such educational procedures as might promote these ends. "The International University is coeducational, conducting colleges of arts and sciences, law, medicine and surgery and business administration." "These two corporations interlocking are legally empowered to conduct education in all of its branches and to confer all degrees. All instruction offered in the state of Massachusetts is put on by authority of and under the direction of the Massachusetts corporation. All degrees are offered and granted by the International University corporation of Rhode Island, which corporation has issued this publication and all other publications and advertising bearing upon degrees." "A two-year premedical course in International University or other approved school is the requirement for admission to our regular, full, four-year medical course leading to degree of M.D. A year of interneship or its equivalent is required after the student receives the degree of M.D. Evening classes are conducted to supplement the day classes for students who may be conditioned in one or more subjects, and to make up time lost on account of sickness, etc. This university also conducts a postgraduate course in our Department of Public Health leading to a degree of Doctor of Public Health (D.P.H.). The two-year premedical course may cover the first two years of our regular B.S. course. The student may then elect to complete the B.S. course and do the remaining two years of work concurrently with the M.D. course, inasmuch as International University is conducted on the four-quarter-year plan. Thirty-six weeks must be devoted in each of four years to the medical course, and the balance of the time may be devoted to working for the B.S. degree. Consequently, many of our medical students will be graduated with degrees of B.S. and M.D.; and by returning for postgraduate work in our Department of Public Health may also obtain the degree of D.P.H."

A four-year course of study in medicine is planned and it is expected that the school will begin its instructions this autumn.

When one seeks information from the prospectus in regard to the educational facilities of this institution, one finds very little helpful specific information. It is stated that "the Boston City Hospital, one of the largest in the country, is located near this university. Numerous other hospitals and clinics are available to our students". There is no detailed statement in regard to laboratory facilities, nor does there appear any statement in regard to faculty after naming the President and Dean and his secretary, except that the Dean is "assisted by an able faculty of professors and instructors in modern medicine and surgery".

THE GEORGE J. OTT CASE

ADVANCE SHEETS

OPINIONS OF THE SUPREME JUDICIAL COURT

George J. Ott *vs.* Board of Registration in Medicine

Suffolk. Argued December 5, 1930—Opinion filed September 15, 1931.

Present: Rugg, C.J., Pierce, Carroll, & Field, JJ.

Board of Registration in Medicine. Supreme Judicial Court.

Appeal by the respondent from a decree entered by order of *Wait*, J., upon a petition under G. L. c. 112, § 64, in the Supreme Judicial Court for the county of Suffolk.

RUGG, C.J. The petitioner was duly registered and entitled to practise medicine as a physician in this Commonwealth. Upon due notice and after a hearing his registration was cancelled by the respondent board for professional misconduct in that he made an agreement to perform an abortion on the person of a named woman. Thereupon this petition was brought. The Massachusetts Medical Society was allowed to intervene without objection. Its attitude is in effect in aid of the petitioner.

This proceeding is wholly statutory. The relevant statutes are three sections of G. L. c. 112. It is provided by § 61 as amended by St. 1921, c. 478, § 1, that the respondent board "after a hearing, may, by a majority vote of the whole board," cancel a registration for causes there enumerated, including

the one stated in the notice to the petitioner and in the order for cancellation of his registration. Section 62 regulates the notice and the hearing before the board. Section 64 provides that upon the petition of a person whose registration has been cancelled the "supreme judicial court . . . may enter a decree revising or reversing the decision of the board, if it appears that the decision was clearly wrong . . ." The scope of the hearing upon such a petition is not specified in the statute with further particularity. It has never been precisely determined by any adjudication. The first case arising under this statute was *Lawrence* v. *Board of Registration in Medicine*, 239 Mass. 424. The chief point there in issue was the constitutionality of the statute. It was said at page 429: "The statute affords every reasonable safeguard to protect the rights of the petitioner by requiring a hearing [before the board] at which he may be present with witnesses and counsel and providing also for hearing in court and revision and reversal of the finding of the board, if justice demands such action." The proceeding in *Davis* v. *Board of Registration in Medicine*, 251 Mass. 283, was not under but related to said § 64. It was said at page 285: "Every presumption is to be made in favor of the regularity and fairness of the methods of procedure and of the proposed action of such a board." A petition under § 64 was before the court in *Dugdale* v. *Board of Registration in Medicine*, 270 Mass. 65. It there was said at pages 68, 69: "The petitioner, in our opinion, was given a full, fair and impartial hearing before the board." "The board heard the witnesses, and the statements made by the petitioner; the degree of credibility to be given to the witnesses was for the board. With this evidence of unprofessional conduct, it could not be found that the decision of the board was 'clearly wrong.'"

There are numerous other statutes providing by various forms of words for greater or less judicial supervision of the acts of administrative or executive boards or officers affecting individuals or rights of property. For example in *Swan* v. *Justices of the Superior Court*, 222 Mass. 542, 543, the jurisdiction as to removal from office by a mayor was "for a review of the charges, of the evidence submitted thereunder, and of the findings thereon by the mayor" with power to "affirm or revoke the order of the mayor." The distinction was drawn between a review and an appeal. These words conferred no power to reëxamine the witnesses and to hear the case anew, but conferred power only to examine the conclusion of the mayor as to facts, law and decision. In *Murray* v. *Justices of the Municipal Court*, 233 Mass. 186, 187, the duty of the court was to "review" the action of the officer or board making the removal, hear the witnesses and affirm the order of removal unless it was made "without proper cause or in bad faith." It was held that no retrial could be had but only a reëxamination of a proceeding already concluded for the purpose of preventing a decision not based upon an unbiased and reasonable judgment, or made without proper cause, and that the decision should not be reversed merely because the reviewing magistrate might feel that he would have decided the matter differently on the evidence. In *Selectmen of Wakefield* v. *Judge of the District Court*, 262 Mass. 477, 481, the governing statute required the judge to "review" the action of the officer or board, "hear any or all of the witnesses and determine whether or not upon all the evidence such action was justified." This was held to require an affirmative finding upon all the evidence that the action was taken upon adequate reasons sufficiently supported by evidence credible to an unprejudiced mind guided by sound judgment and correct rules of law. It has been held that G. L. c. 161, § 142, and its predecessors conferring jurisdiction in equity "to review, annul, modify or amend the rulings of any state department or commission relative to street railways as law and justice may require" extend only to rulings of law and not to findings of fact. See also G. L. c. 25, § 5; c. 161, §§ 140, 141. *Paine* v. *Newton Street Railway*, 192 Mass. 90. *Donham* v. *Public Service Commissioners*, 232 Mass. 309, 328. *Boston & Albany Railroad* v. *New York Central Railroad*, 256 Mass. 600, 618. There are sundry statutes affording varying degrees of review of action taken by boards and officers exercising administrative or quasi judicial functions more or less analogous to the one here to be considered. See for example G. L. c. 167, § 33, as to bank commissioner, *Cosmopolitan Trust Co.* v. *Mitchell*, 242 Mass. 95, 113; c. 174, § 7; as to insurance commissioner, c. 175, §§ 5, 108, 132, 134; c. 152, § 55; *Aetna Life Ins. Co.* v. *Hardison*, 199 Mass. 181; as to minimum wage, c. 151, § 4; as to compensation for joint use of certain railroad properties, c. 160, §§ 60, 131; *Boston & Albany Railroad* v. *Public Service Commissioners*, 232 Mass. 358; as to orders affecting common carriers, c. 159, §§ 40, 47, 48; *Barrows* v. *Farnum's Stage Lines, Inc.* 254 Mass. 240; and G. L. c. 161, § 128. No aid is to be derived from a review of those statutes or decisions. Where it has been the purpose of the General Court to provide for a new trial by a court of questions determined in the first instance by a public board or officer the word "appeal" has been used. See for example as to appeals from refusal to abate taxes, G. L. c. 59, §§ 7, 65, 73, 81; c. 62, §§ 47, 51; c. 63, §§ 51, 71; c. 60 A, § 2, added by St. 1928, c. 379, § 1. Compare G. L. c. 58 A, § 6, added by St. 1930, c. 416, § 1. In other instances provision is made that relief may be sought according to ordinary procedure in equity, which implies an entire trial of the case upon its merits. G. L. c. 63, § 77; c. 65, §§ 27, 30.

The statutory words here governing are not precisely the same as those used elsewhere in our statutes. The proceeding is to be begun by a "petition." That is a word familiar in equity. See G. L. c. 214, § 7. The decision of the court is to be expressed by the entry of a "decree." That word commonly is used to describe the expression of an adjudication in equity. *Gould's Case*, 215 Mass. 480, 482. See *Holcombe* v. *Creamer*, 231 Mass. 99, 103-104. The power of the court may be put forth to change

a determination by the board only in the event that it appears to be "clearly wrong." That also is a phrase familiar in equity to express the reluctance of an appellate court to change findings of fact made by a magistrate before whom the case has been tried at large and on oral testimony. *Dean* v. *Emerson*, 102 Mass. 480, 482. *Lindsey* v. *Bird*, 193 Mass. 200. *Tingley* v. *North Middlesex Savings Bank*, 266 Mass. 337, 339. The scope of the jurisdiction of the court on the petition is restricted to "revising or reversing" that which was done by the board. That is different from a decision on appeal. To revise in this connection means in substance the same as to review. That does not import an entire retrial such as would arise on appeal. It indicates a reëxamination of proceedings already had. *Swan* v. *Justices of the Superior Court*, 222 Mass. 542, 547-548. The procedure then is that there is not to be a new trial on the merits of the issues, with hearing and decision as in the ordinary suit instituted by petition in equity, tried before a judge who reaches his own conclusion on an independent examination of the case at large unaffected by anything which has gone before. The decision of the board is to be examined on such a petition with every reasonable presumption in its favor and it is not to be revised or reversed without plain proof of such error or mistake as to vitiate fairness in the hearing or justice in the decision or to show that the conclusion reached by the board is palpably not in accordance with truth, is the result of error or mistake, or is unsupported in law. *Mayor of Medford* v. *Judge of District Court*, 249 Mass. 465. *Selectmen of Wakefield* v. *Judge of District Court*, 262 Mass. 477. *Newcomb* v. *Board of Aldermen of Holyoke*, 271 Mass. 565, 568, 569.

At the trial of the case at bar before the single justice the evidence consisted of a transcript of all that occurred at the hearing before the respondent board, an oral restatement somewhat elaborated by the petitioner and his wife and by the two accusing witnesses of the testimony given by them before the board, the oral testimony of the attorney at law who represented the petitioner at that hearing to the effect that the attitude of the board was unfair and insulting, testimony tending to impeach the veracity of Mrs. Warner, one of the witnesses against the petitioner, testimony as to the good professional reputation and standing of the petitioner, including testimony as to an inquiry into the matter by a committee of the Massachusetts Medical Society, and testimony as to how the investigation and complaint concerning the petitioner happened to be made. No objection appears to have been made to evidence. Therefore it was all entitled to its probative force. *Hubbard* v. *Allyn*, 200 Mass. 166, 171. Requests for rulings and findings presented by the petitioner were granted to the effect (1) that he was deprived of a full, fair and impartial hearing before the respondent board and that hence its decision was clearly wrong, (2) that the action of the respondent board in refusing to grant him a reasonable continuance of the hearing deprived him of a reasonable opportunity to prepare his defence and that hence its decision was clearly wrong and (3) that the presumption in favor of regularity and fairness of procedure is merely a presumption of fact amply rebutted by the evidence. Upon these the single justice indorsed "Given in substance." Requests of the respondent were denied to the effect that upon all the evidence (1) the petition must be dismissed, (2) it cannot be found that the decision of the board was clearly wrong and (3) it cannot be found that the decision of the board based upon the evidence before it was clearly wrong. Findings, rulings and order by the single justice were filed of the tenor following: "I find that the petitioner was not given the full, fair and impartial hearing to which by law he was entitled; that the decision of the Board was based upon testimony of an unreliable employee of the State Police who planned to entrap the petitioner into consenting to perform an illegal operation upon her by untrue representations in regard to her physical condition, testimony which the petitioner was given no reasonable opportunity to meet before the Board, and which I find, after hearing, was wilfully false; that no other evidence justifies the finding of the Board; and that the decision of the Board was clearly wrong. I order that a decree be entered reversing the decision of the Board." The appeal of the respondent board brings the case here.

The investigation had its origin in a statement on file with the respondent board indicating a possible suspicion that the petitioner was an abortionist. It became the duty of the witness Townsend, a sergeant of the State police, to make an investigation. He took Mrs. Warner to the office of the petitioner and waited outside while she went in. She was a regular employee of the State police as an investigator and had been for some time. She interviewed the petitioner as an ostensible patient. On the day following Townsend and Mrs. Warner went together to the office of the petitioner. The testimony of Mrs. Warner both before the board and in court was to the effect that the petitioner on the first day agreed to perform an abortion on her and that on the second day he admitted in the presence of Townsend that he had done so. The testimony of Townsend was categorical in court that the petitioner said to him on the second day that he had agreed to perform an abortion on Mrs. Warner. His testimony before the board was susceptible of that construction. Testimony adverse to the petitioner was contradicted by the oral testimony of the petitioner and his wife at the hearing before the board and at the trial in court.

The evidence does not warrant a finding that the petitioner was deprived of a reasonable opportunity to prepare his defence before the board by its refusal to continue his case. It must be presumed that he was an intelligent man. He was given notice of the hearing and of the charge about a week in advance of the hearing. He must have realized the serious nature of the charge. He did not attempt to retain counsel until the night before the time set for the hearing. No adequate excuse appears for such conduct by one desiring time for preparation of his case. He appeared at the hearing with an

attorney and his associate attorney. The petitioner and his wife were given full opportunity to testify. Whether a continuance ought to be granted commonly rests in the discretion of the trial tribunal. *Noble* v. *Mead-Morrison Manuf. Co.* 237 Mass. 5, 16. *Blankenburg* v. *Commonwealth*, 260 Mass. 369, 378. *Commonwealth* v. *Soaris*, Mass. Adv. Sh. (1931) 973, 976. There is not sufficient evidence to show abuse of discretion by the board in refusing to continue the hearing. The same is to be said about the refusal by the board to reopen the hearing several days after it had been concluded.

The petitioner was entitled to a full, fair and impartial hearing before the board. Impatience, discourtesy or bad manners, regrettable though they are in those exercising the judicial function, do not invalidate a trial or require the setting aside of a decision provided the essentials of sound judicial conduct are not violated. *Harrington* v. *Boston Elevated Railway*, 229 Mass. 421, 433. There were at the hearing before the board numerous interruptions and comments in which three members of the board participated. There were remarks sarcastic in nature and constituting a close approach to affronts to counsel conducting the hearing for the petitioner under the embarrassment of slight opportunity for preparation. These were incompatible with an open and an unbiased mind. The reliability of the testimony of those witnesses who accused the petitioner was of the utmost importance. Reasonable cross-examination to test its truthfulness and the credibility rightly to be attributed to it was the right of the petitioner. Of course cross-examination must not be protracted to an undue length. *Commonwealth* v. *Coughlin*, 182 Mass. 558, 564. Much must be left in this particular to the discretion of the trial tribunal. Time ought not to be wasted. But it is plain that no adequate cross-examination was permitted by the board. *Goldman* v. *Ashkins*, 266 Mass. 374, 379-380. *Alford* v. *United States*, 282 U. S. 687, 691-692. That conclusion is reached having in mind that the board is composed of physicians not trained in cross-examination. The members have a right to see that their time is not frittered away. But they also must know from common experience with men and affairs and from literature indubitably reflecting human nature that reasonable cross-examination has a tendency to develop the truth. The rulings of the board in restricting the cross-examination and in excluding lines of inquiry as expressed by the chairman show that the counsel for the petitioner was hindered in his efforts at reasonable cross-examination. The evidence of this conduct disclosed in the record need not be narrated in detail. It shows an attitude on the part of some members of the board which was not fair and impartial. The finding of the single justice on this point was warranted. *National Fire Ins. Co.* v. *Goggin*, 267 Mass. 430, 436-437. *Preston* v. *Peck*, 271 Mass. 159.

The further finding that the decision of the board was based upon the unreliable testimony of an employee of the State police which was found to be wilfully false by the single justice and that therefore the decision of the board was clearly wrong cannot be sustained. This is a finding solely as to the credibility of a single witness. Testimony of the nature of that given by the witness Warner was competent as has been decided many times, although it should be examined with great care. *Commonwealth* v. *Willard*, 22 Pick. 476. *Commonwealth* v. *Downing*, 4 Gray, 29. *Commonwealth* v. *Putnam*, 2 Allen, 301. *Commonwealth* v. *Graves*, 97 Mass. 114. See *Commonwealth* v. *DeLacey*, 271 Mass. 327. The members of the board, while perhaps not highly trained in the weighing of evidence, constitute the tribunal created by the General Court to perform that duty. It may be presumed that they are as intelligent as are jurors charged in matters of high importance with the duty of determining the witnesses to be believed and those to be distrusted and that they possess as much knowledge of human nature and insight into the motives leading the ordinary individual to action as do such jurors. It is not the province of a court empowered merely to revise and reverse the decision of such a board when it is clearly wrong to make such a finding simply because it disbelieves a witness whom the board believed. That would be to retry the case as if it were an appeal.

The requests for rulings by the respondent board were denied rightly in view of the finding to the effect that the petitioner was not accorded a full, fair and impartial hearing. A decision which is based upon conduct wanting in impartiality, upon a biased attitude of mind and upon refusal to permit essential cross-examination within reasonable limits must ordinarily be held to be clearly wrong. It must be supported by a heavy preponderance of evidence to be permitted to stand. That is lacking in the case at bar because there was sharp contradiction in testimony upon the vital point. This finding of the single justice is enough to support the decree.

Decree affirmed.

C. F. Lovejoy, for the respondent.

R. G. Dodge, (*G. L. Ellsworth* with him,) for the petitioners.

A RADIO MESSAGE PREPARED AND SPONSORED BY THE COMMITTEE ON PUBLIC EDUCATION OF THE MASSACHUSETTS MEDICAL SOCIETY FOR THE DEPARTMENT OF PUBLIC HEALTH*

What To Do About Cancer

Cancer may affect practically any organ of the body. In its earliest form it consists in a localized growth of tissue which serves no function in the body and which is apparently not controlled by the factors governing normal growth and repair. Often it is possible to show that the area where cancer develops has been subject to chronic irritation which has called forth a great deal of growth and repair activity in the tissues; and then at some one

*Broadcast September 17, 1931, Station WBZA, 5:17 P. M.

point the growth and repair get out of control and cancer begins.

As the cancer increases in size, it crowds neighboring organs, interfering with their functions. The surface of the cancer may burst through the skin or mucous membrane, and cause bleeding. Finally, sooner or later most cancers send out colonies to other parts of the body, at first to the nearby lymph nodes, but later all over the body. From what I have said, it is clear that if cancer is to be cured, it must be attacked while it is still sharply localized at one place. before it has spread widely and before it has crowded or invaded organs essential to life. Furthermore the attack should be radical; that is, the entire growth must be destroyed along with all the surrounding tissue that might have been invaded. The treatment is, of course, in the hands of the doctor; from the viewpoint of the patient the chief questions are as follows: First, how can I know whether I have cancer; second, if I should have cancer, how can it be cured.

Unfortunately, the earliest symptoms of cancer are practically never disabling and only seldom include pain. Thus, it is very easy to neglect the condition until the chance for favorable treatment is considerably lessened.

What then, are the early symptoms that one must watch for?

First of all, open sores or small hard or scaly patches on the skin or lip or in the mouth. White patches in the mouth, especially if they show a tendency to become thickened or cracked, are further danger signals. Practically all simple sores of the skin or mouth heal up within a week or ten days. If they fail to do so and instead become larger, cancer should be suspected. If such a sore should develop at an area subject to chronic irritation, for instance where the bridge or bows of spectacles chafe the skin, or where a pipestem rubs the lip, or opposite a jagged tooth or loose dental plate, the likelihood of its being cancer is much increased. Black moles of the skin, especially if they are subject to irritation or show any tendency to grow, should certainly be regarded with grave suspicion.

Secondly, a lump is a very common early sign of cancer. A lump in the breast or in the neck should never be disregarded, but should be brought to the attention of a physician at once.

Abnormal bleeding of any kind is very suggestive of cancer. Nosebleeds, coughing or spitting or vomiting of blood, blood in the urine or with the bowel movements, or irregularities in menstruation may be the only symptom noted by the patient in many cases of early cancer.

Finally, changes in the normal functions of the body, such as hoarseness, difficulty in swallowing, indigestion, intestinal gas or cramps, or changes in bowel habit or in urination; any of these may be the only indication of the beginnings of internal cancer.

If a person should develop any of the symptoms I have mentioned, he should consult his physician promptly. All too often we find that instead of doing this, he takes the well-meant but misinformed advice of friends and neighbors and drinks bottle after bottle of medicine, applies patent salves and washes, takes courses of treatment from quacks and charlatans, and so loses valuable time before proper treatment is started.

It is now time for the physician to do his part. The patient presents a symptom or complaint which may represent the beginning of cancer. He has a right to a complete and thorough examination from the physician. Sometimes the physician may be too busy or may lack facilities to make such an examination. In that case the patient may be referred to another physician, or to one of the excellent cancer clinics aided by the Commonwealth, which are maintained in many of the principal cities, a list of which may be had on request to the State Department of Public Health, State House, Boston. Here facilities are provided for thorough diagnostic and consultation service, and many of the clinics are also equipped for treatment. The hurried or puzzled physician can do no better for his patient than to send him to one of the clinics for consultation and advice.

The annual health examination is another method by which cancer may be detected in its earliest stages, when it is curable.

One further thing for the patient to do is to accept promptly the treatment recommended by the physician or the clinic. The early symptoms often seem so trifling as not to require an operation at once; but if the patient delays until symptoms are severe often it is then too late for operation.

Thus to summarize, a person should be watchful for the symptoms of early cancer, he should seek the advice of his physician and insist on a thorough examination without delay, and he should follow promptly the advice received. Only in this way can we make progress in the treatment and cure of this disease.

There seem to be a few commonly held misapprehensions in regard to cancer. One is that it is in some way disgraceful to have cancer, that the disease indicates tainted blood, or that it causes some reflection on the moral character of the sufferer. Another is that a person with cancer is dangerous to others, and that the disease may be spread by contact. Both of these superstitions are of course absolutely false. Still another widespread belief is that cancer is hereditary, and that if one's ancestors and parents showed no cancer one is probably immune. This, too, is very far from the truth. Still another erroneous belief I have mentioned above, namely, that pain is an important early symptom. How often a patient protests: "I don't see how it can be cancer, because it doesn't cause any pain, and besides, no one in my family has ever had cancer."

At the risk of repetition let me insist again that

cancer in its early stages is practically never painful.

Another false belief, and perhaps the worst of all, is that cancer is incurable and hopeless. Too often this belief is shared not only by the patient and his friends but also by the family physician as well. The result is delay all along the line, and often, solely as a result of such delay, their worst fears are justified.

Cancer in its early stages is curable in most cases, and even when it has advanced considerably, many cases are curable by surgical treatment. Even cases which have passed the stage where cure can be expected can be alleviated and made much more comfortable by proper treatment. The only unpardonable sin is an attitude of hopelessness, and the only danger is in delay.

MORTALITY RATES

Telegraphic returns from 82 cities with a total population of thirty-six million for the week ending Sept. 19, indicate a mortality rate of 10.9 as against a rate of 10.3 for the corresponding week of last year. The highest rate (20.6) appears for Memphis, Tenn., and the lowest (6.1) for Akron, Ohio. The highest infant mortality rate (19.4) appears for Nashville, Tenn., and the lowest for Cambridge, Mass., Long Beach, Calif., Lynn, Mass., New Haven, Conn., St. Paul, Minn., Schenectady, N. Y., Seattle, Wash., Somerville, Mass., and Tacoma, Wash., which reported no infant mortality.

The annual rate for 82 cities is 12.2 for the thirty-eight weeks of 1931, as against a rate of 12.1 for the corresponding weeks of 1930.

COMPARISON OF DISEASE INCIDENCE IN CONNECTICUT WITH 1930 AND SEVEN YEAR AVERAGE

MONTH ENDING SEPTEMBER 19, 1931

Disease	1931					1930			
	Week ending Aug. 29	Week ending Sept. 5	Week ending Sept. 12	Week ending Sept. 19	Average cases reported for week corresponding to Sept. 19 for past seven years	Week ending Aug. 30	Week ending Sept. 6	Week ending Sept. 13	Week ending Sept. 20
Actinomycosis	—	—	—	—	—	—	—	1	—
Cerebrospinal Men.	1	—	—	—	1	1	3	1	—
Chicken Pox	5	22	4	2	4	6	2	2	3
Diphtheria	3	6	8	3	16	6	5	7	3
Encephalitis Epid.	—	1	—	—	—	—	—	—	—
Favus	—	—	—	—	—	2	—	—	—
German Measles	—	4	1	2	—	—	1	4	2
Influenza	—	2	3	1	2	2	1	1	3
Malaria	—	—	1	—	—	—	—	—	—
Measles	3	5	2	3	5	2	—	4	3
Mumps	20	5	1	3	5	2	7	7	5
Paratyphoid Fever	1	—	2	1	3	1	—	—	—
Pneumonia (Broncho)*	7	8	11	9	11	7	5	6	12
Pneumonia (Lobar)	6	8	6	10	11	5	6	6	14
Poliomyelitis	134	162	92	101	5	3	1	—	8
Scarlet Fever	9	12	3	7	16	8	3	14	17
Septic Sore Throat	1	2	—	1	—	—	1	1	1
Tetanus	1	1	—	1	—	—	—	—	1
Trichinosis	—	—	—	—	—	—	—	1	—
Tuberculosis (Pul.)	22	24	16	18	32	19	34	22	34
Tuberculosis (O. F.)	—	—	4	1	1	—	2	3	1
Typhoid Fever	9	2	7	8	9	1	2	12	—
Undulant Fever†	1	—	—	—	—	—	—	—	—
Whooping Cough	67	53	51	57	39	22	30	44	18
Gonorrhea	42	36	30	29	35	23	21	46	55
Syphilis	47	63	21	30	25	26	41	23	37

*Made reportable January 1, 1925.
†Made reportable August 14, 1928.

Remarks: No cases of Asiatic cholera, glanders, plague and yellow fever during the past seven years.

RHODE ISLAND MILK REGULATION LAWS MADE MORE EFFECTIVE

The Commissioner of Agriculture for Rhode Island has made strict regulations under which the Hopkins milk law will operate.

Inspection and registration of all dairies which distribute milk in Rhode Island are required by this law.

A considerable amount of Vermont milk is sent to Rhode Island and the contributing dairies have been inspected.

CORRESPONDENCE

AMIODOXYL BENZOATE

A Disagreement with Dr. Millard Smith

Medical Clinic and Department of Clinical Research
of the Boston Dispensary
520 Commonwealth Avenue

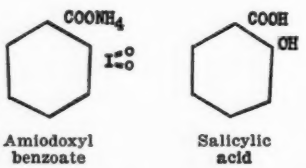
September 22, 1931.

Editor, *New England Journal of Medicine,*

Dear Sir:

In a letter by Dr. Millard Smith which appeared in the *New England Journal of Medicine* September 3, 1931, a statement with which I am forced to take issue was made relative to amiodoxyl benzoate. While Dr. Smith was condemning the action of the Council on Pharmacy and Chemistry for its refusal to accept Farastan (mono-iodo-cinchophen) for New and Nonofficial Remedies he remarked, "I wonder why they" (the Council) "have not decreed that amiodoxyl is an illogical preparation for it is only a combination of iodine, oxygen and salicylic acid."

Just what prompted this statement I am unable to understand since amiodoxyl benzoate is a definite organic chemical compound which does not contain salicylic acid nor a salicylate radical. To illustrate this point I am reproducing the structural formula of both compounds:



Amiodoxyl benzoate — Salicylic acid

A comparison of these two formulae shows that about the only chemical relationship that can possibly exist is that both are derivatives of benzoic acid. However, there are many derivatives of benzoic acid known to organic chemists and their actions and chemical properties are as varied as their formulae.

In an earlier paper Dr. Smith pointed out that amiodoxyl benzoate is O-iodoxy-benzoic acid and that salicylic acid is O-hydroxy-benzoic acid. With no other evidence on which to base his conclusions he explained the action of amiodoxyl benzoate on the grounds that it acted like salicylates. This was accepted by various other writers despite the fact that in their original paper Young and Youmans showed by specific chemical tests that iodine was not given off in the body, nor were salicylates formed in it. Experiments showed that the iodine could only be liberated by exploding the compound in a Carious bomb. Heinz showed that O-iodbenzoic acid when administered to animals was not active in the body, and Novello, Miriam and Sherwin found that it appeared in the urine partly as such and partly combined with hippuric acid. Young found that amiodoxyl benzoate was excreted in the urine partly as O-iodbenzoic acid and partly combined with hippuric acid. A comparison of the known pharmacological actions of the two drugs demonstrated that: Amiodoxyl benzoate acts chiefly in the body by virtue of its available oxygen attached to its iodin atom (Loevenhart and Grove, and Loevenhart and Eyester). Salicylic acid has no oxygen in its molecule which can act as an oxidizing agent. Further evidence of the difference in the action of the two compounds is shown by the fact that by its oxidizing properties amiodoxyl benzoate increases phagocytosis, the formation of specific hemolysins and agglutinins, and definitely depresses the sympathetics. On the other hand, salicylic acid inhibits the formation of specific antibodies and does not affect the sympathetics in ordinary dosage. The salicylates act chiefly by virtue of their analgesic and antipyretic properties.

In closing I wish to say that it is not the purpose of this letter to take part in the discussion of the action of the Council on Pharmacy and Chemistry, but to correct an erroneous statement which has appeared in this *Journal.*

Very truly yours,

Albert G. Young, M.D.

A MERITED REBUKE

September 29, 1931.

Editor, *New England Journal of Medicine,*

At the risk of becoming a nuisance in the matter of the mismanagement of gonorrhea and syphilis, we beg your attention to the following case. As new cases of this sort repeatedly come to our attention, we are beginning to lose hope that these communications, if read, ever penetrate beyond the reader's retina.

We have had brought to our attention within the last few days the case of a young woman who six weeks after intercourse developed a lump on the left labium. She went to a physician in the Metropolitan area who, so far as we can determine, enjoys good standing as a medical practitioner. The physician discovered the lesion and in addition a palpable gland in the left groin. He apparently suspected syphilis, for a Wassermann was taken which proved, as might be expected, to be negative. Instead of arranging for immediate dark-field examination which should have been a simple matter in the Metropolitan area, he was content to wait until seventeen days later when on August 7 a second

blood Wassermann was reported as doubtful. However, on August 7 a macular rash had appeared on the young woman's body.

In spite of the history, the lump on the labium, the gland in the left groin, the doubtful Wassermann (following one previously negative) and the macular rash, this physician still hesitated for eighteen days longer when, on August 25, in addition to the first lesion there was a contact chancre on the right labium, a macular rash on the patient's body and a definitely positive Wassermann. Upon the final accumulation of all of these positive diagnostic criteria, the patient was referred by the physician to a Boston clinic for treatment.

Here is a typical case of syphilis in a young woman which could have been diagnosed at or shortly after the first visit she made to the physician's office if proper dark-field examinations had been performed. Treatment could have been begun at once while the disease was in the negative Wassermann stage and her chances for cure would have been practically 100%. There was no reason why, at the cost of a twenty cent car fare and the relatively small fee charged by clinic laboratories for dark-field examination, such examination could not have been made. When, on August 7, the blood had changed from negative to doubtful, the lesion had not healed and a macular rash had appeared on the patient's body, treatment should have been begun without any further hesitation, and the young woman's chances of cure still were about 80%. Since, after waiting until August 25 when a still greater percentage of her chances for cure had gone glimmering, the physician finally referred the case to a clinic for treatment, it becomes reasonable to ask why in the name of Heaven she wasn't referred to the clinic in the first place, on July 21, where a diagnosis would have been made and the case properly managed from that point on.

For several years this Department has circularized the physicians of the State with all of the best material it could get together on the management of syphilis and gonorrhea. It has done and is doing all that it can to encourage patients to go to their physicians for treatment and to remain under medical care so long as medical care is necessary. There is abundant evidence that a large bulk of the material sent to physicians has quickly reached a resting place in the nearest wastebasket. The above type of case comes as an all too frequent confirmation of other evidence that not much attention is paid by many physicians to the management of these most prevalent and dangerous communicable diseases.

We are not surprised that it is necessary to quarrel with the physician over his failure to report delinquent patients or to make some effort to identify sources of infection. We wish that the machinery could be set up which would be acceptable to physicians and which would make it unnecessary for them to do much of the work surrounding the case of gonorrhea or syphilis which is ordinarily done by the health officer in other communicable diseases; but we are disturbed over the constant repetition of events which clearly demonstrate that large numbers of the medical profession, although they are perfectly willing to accept cases of gonorrhea or syphilis which come to their offices, are not willing to acquaint themselves with the proper management of gonorrhea and syphilis.

While it is naturally the province of the health officer to promote and encourage the use of procedures which aim for the protection of the public health, it should not be necessary for the Department of Health to have constantly to remind the medical profession that even the patient is entitled to some consideration from the man in whom he places his confidence as a medical practitioner.

As we said in a recent communication, we are somewhat at a loss to know how to advise the druggist who unscrupulously attempts to treat syphilis and gonorrhea, when it is apparent that in many instances the patient upon being referred by the druggist to a physician may find himself as poorly off as if he had continued with the druggist in the first place.

Yours truly,

N. A. Nelson, M.D., *Assistant Director*,
Division of Communicable Diseases.

AN OFFER OF AN ARTIFICIAL LARYNX

New England Telephone and Telegraph Company
245 State Street
Boston

September 30, 1931.

Editor, *New England Journal of Medicine*,

May I address a few words to your readers about the artificial larynx recently perfected by the Bell Telephone Laboratories as an aid to those deprived of speech through removal of the larynx or paralysis of the vocal cords? I feel privileged to do so because it is not a commercial product, and my purpose is humanitarian.

The technical laboratories of the Bell System are engaged in the study of voice transmission and reception by telephone. Its researches into the mechanics of speech led to the development of the initial artificial larynx, and continued research produced the improved one now offered as an uncommercialized by-product of telephone research.

This improved artificial larynx is to be distributed by the New England Telephone and Telegraph Company (one of the associated companies constituting the Bell System) through the medical profession, to those without a voice, at the cost to manufacture, without charge for research, selling, distribution, or thought of financial profit. The price is $22; at $30 additional a bellows is supplied to those whose loss of voice is due to vocal cord paralysis.

Furthermore, the improved artificial larynx is offered, without charge, to anyone using one of the original instruments.

If any of the doctors have a patient who might

be benefited, or know of someone to whom the artificial larynx might be useful, or know of someone still using one of the original instruments which we shall be happy to replace without charge, we shall take pleasure in coöperating.

May I, acting for the Company, offer my services in supplying any additional information, or if need be in obtaining an artificial larynx for a patient.

Sincerely yours,
D. L. LYNCH.

NEWS ITEMS

AN HONOR TO DR. JAMES A. SPALDING—The associates of Dr. James A. Spalding of Portland, Maine, tendered a complimentary dinner to him Friday evening, September 25, 1931 and in recognition of his service to the Maine General Hospital presented a painting of the honored guest to the hospital.

Dr. Spalding graduated from the Harvard Medical School in 1870 and has practiced ophthalmology on the Staff of the Maine General Hospital.

CHARGE AGAINST DR. MacCORMACK OF WEBSTER HAS BEEN DISMISSED—At the meeting of the Board of Registration in Medicine held on September 24, 1931, it was voted that the charge against Dr. T. Marion B. MacCormack of Webster be dismissed.

Dr. MacCormack has voluntarily returned to the Board of Registration in Medicine her certificate of registration for the practice of medicine in Massachusetts.

NOTICES

MEDICAL CLINIC AT THE PETER BENT BRIGHAM HOSPITAL

At 3:30 P. M. on Thursday, October 15, in the Amphitheatre of the Peter Bent Brigham Hospital, a medical clinic will be given by Dr. Henry A. Christian, to which physicians are cordially invited. The clinics will be held regularly on Thursday afternoons.

REMOVALS

Francis E. Park, M.D. has moved his office to Haddon Hall, 282 Berkeley Street, Boston.

A. Leo Brett, M.D. has opened an office at 270 Commonwealth Avenue, Boston.

APPOINTMENTS BY THE DIRECTORS OF THE METROPOLITAN LIFE INSURANCE COMPANY

The Board of Directors of the Metropolitan Life Insurance Company at the meeting on September 22 made the following appointments:

Third Vice-President in charge of Policyholders' Health and Welfare, Donald B. Armstrong, M.D., formerly Fourth Vice-President.

Third Vice-President and Statistician, in charge of Public Health Relations, Louis I. Dublin, Ph.D., formerly Statistician.

Dr. Armstrong and Dr. Dublin will carry on the work of the Welfare Division formerly under the late Dr. Lee K. Frankel.

F. H. ECKER, *President.*

September 22, 1931.

ANNOUNCEMENT

Dr. Peter Ferrini is engaged in general practice at 26 Spring Street, Brockton, after being at Lakeville Sanatorium for three years, where he served as senior physician.

RADIO HEALTH MESSAGES

Sponsored by the Public Education Committee of the Massachusetts Medical Society and the Massachusetts Department of Public Health.

Courtesy WBZA. Thursdays at 5:17 P. M.

October

15 Sunlight and Ultra-violet Rays
22 Hospitals—Then and Now
29 What the Public Should Know of Diabetes

November

5 High Blood Pressure
12 The Care of Pulmonary Tuberculosis
19 Accidents in the Home
26 Fatigue as a Symptom of Disease

December

3 Overweight—Cause and Prevention
10 Can We Prolong Life?
17 Pasteurized or Raw Milk
24 Public Health in the Coming Year
31 Mental Health

STATE HOUSE BROADCAST

Sponsored by the Massachusetts Department of Public Health.

Courtesy WEEI. Fridays at 12:30 P. M.

The various activities of the Department are discussed by the Directors of its nine Divisions.

RADIO HEALTH FORUM

Directed by the Massachusetts Department of Public Health.

Courtesy WEEI. Fridays at 4:50 P. M.

Queries from the public are answered under the sponsorship of the Department.

Questions on Health and Prevention of Disease may be sent to: Radio Health Forum, State Department of Public Health, State House, Boston.

PROGRAM

SPECIAL SERIES OF BROADCASTS

Sponsored by the Massachusetts Department of Public Health. Courtesy WEEI. Mondays 7:15 P. M.

Cancer

1931

October

12 The Federal Government and Cancer
J. W. Schereschewsky, M.D.

19 What the World Is Doing About Cancer
Clarence C. Little, M.D.

26 Fear of Cancer
Kendall Emerson, M.D.

November

2 How To Use a Cancer Clinic
George H. Bigelow, M.D.

9 A Hopeful Note About Cancer
Timothy Leary, M.D.

Health from Zero to Ninety

16 Prenatal and Infant Health
Harold C. Stuart, M.D.

23 Preschool and School Health
Stanley W. Osborn, M.D.

30 Health and the College Student
Mary DeKruif, M.D.

December

7 Health and Safety of the Young Adult
C.-E. A. Winslow, Ph.D.

14 Health At and After the Prime of Life
Herbert L. Lombard, M.D.

WHITE HOUSE CONFERENCE ON CHILD HEALTH AND PROTECTION

Round Tables

December

21 Round Table No. 1—Why Another Conference?
Conducted by George H. Bigelow, M.D.

28 Round Table No. 2—How Much Care Does the Well Child Need?
Conducted by Mr. Frank W. Kiernan

1932

January

4 Round Table No. 3—Health in Education—Education in Health
Conducted by Raymond Patterson, Ph.D.

11 Round Table No. 4—What a Community Owes to Its Children
Conducted by Lila Owen Burbank, M.D.

18 Round Table No. 5—Unto the Least of These
Conducted by Mr. Alfred F. Whitman

NOTICES OF MEETINGS

THE WILLIAM HARVEY SOCIETY

The William Harvey Society was organized in 1930 by the students of Tufts College Medical School. Its purpose is to further interest in the Art of Medicine. Membership in the society is limited to Tufts College Medical School students, who elect a governing board, which develops the program and conducts the business of the organization. There is an Advisory Board consisting of nine members of the faculty.

Members of the medical profession are cordially invited to attend the meetings of the society, which are held once each month during the school year in the auditorium of the Beth Israel Hospital, Boston.

The Advisory Board consists of the following members: President John A. Cousens, Dean A. Warren Stearns, Dr. Edward M. Hodgkins, Dr. Timothy Leary, Dr. Abraham Myerson, Dr. Louis E. Phaneuf, Dr. Cadis Phipps, Dr. Nathan Sidel, Dr. Benjamin Spector.

The Governing Board consists of the following members: President, Robert T. Phillips 1932; Vice-President, Edward T. Abrahms 1932; Secretary, Lorrimer M. Schmidt 1933; Treasurer, Doris R. Goodman 1934; Wayne C. Barnes 1932, William J. Crooks, 3d, 1932, Joseph H. Doll 1932, Joseph H. Nicholson 1933, Edward S. Ramsdell 1933, Harold Wood 1933, Leroy Mayo 1934, Daniel Munnell 1934, Arthur Stern 1934.

The program of the Society for the year 1931-1932 is as follows:

FRIDAY, OCTOBER 9, 1931, 8:00 P. M.

(In cöoperation with the Boston Dispensary)

Speaker: Dr. Russell Lafayette Cecil, Assistant Professor of Clinical Medicine, Cornell Medical School.

Subject: "The Bacteriologic Point of View." To be supplemented by an illustrated lecture on arthritis.

Chairman: Dr. A. Warren Stearns, Dean of Tufts Medical School.

WEDNESDAY, NOVEMBER 25, 1931, 8:00 P. M.

Speaker: Dr. Chevalier Jackson, Director of the Chevalier Jackson Bronchoscopic Clinic, Philadelphia.

Subject: "Bronchoscopy in the Prophylaxis of Diseases of the Lungs." Illustrated with lantern slides and motion pictures.

Chairman: Dr. Harry James Inglis, Professor of Oto-laryngology, Tufts Medical School.

FRIDAY, DECEMBER 11, 1931, 8:00 P. M.

Speaker: Dr. Hans Zinsser, Professor of Bacteriology and Immunity, Harvard Medical School.

Subject: "The Lesson to be Derived for Education in General from Recent Changes in Medical Education."

Chairman: Dr. Joseph Hersey Pratt, Professor of Clinical Medicine, Tufts College Medical School.

FRIDAY, JANUARY 8, 1932, 8:00 P. M.

Speaker: Hon. James M. Curley, Mayor of Boston.

Subject: "What the City of Boston Is Doing to Promote the Public Health."

Chairman: Dr. Charles E. Wilinsky, Director, The Beth Israel Hospital.

FRIDAY, FEBRUARY 12, 1932, 8:00 P. M.

Speaker: Dr. Stanley Hart Osborn, Commissioner of Health, Connecticut.

Subject: "Problems of and Opportunities in Public Health."

Chairman: Dr. Dwight O'Hara, Professor of Preventive Medicine, Tufts College Medical School.

FRIDAY, MARCH 11, 1932, 8:00 P. M.

Speaker: Dr. Walter Bradford Cannon, George Higginson Professor of Physiology, Harvard Medical School.

Subject: "Vivisection and Animal Experimentation."

Chairman: Dr. Abraham Myerson, Professor of Neurology, Tufts College Medical School.

FRIDAY, APRIL 8, 1932, 8:00 P. M.

Speaker: Dr. George Washington Crile, Director, The Cleveland Clinic.

Subject: "Biologic Indications for and End-Results of Denervation of the Adrenal Glands."

Chairman: Dr. Horace Binney, Professor of Surgery, Tufts Medical School.

FRIDAY, MAY 6, 1932, 8:00 P. M.

Speaker: Dr. Fred Houdlett Albee, Professor of Orthopedic Surgery, New York Post-Graduate Medical School.

Subject: "Bone-Graft Surgery." Illustrated with motion pictures.

Chairman: Dr. Mark Homer Rogers, Professor of Orthopedic Surgery, Tufts Medical School.

NEW ENGLAND HEART ASSOCIATION

The New England Heart Association plans to continue the program of last winter with a series of monthly discussions of various aspects of cardiovascular disease. The first meeting will be November 4 at 4:30 P. M. at the Boston Medical Library. The subject will be "Raynaud's Disease." The speakers will be Dr. James C. White and Sir Thomas Lewis. Discussion of these papers will be by Dr. Arthur W. Allen. A later announcement will give the subjects of the succeeding meetings.

HOWARD B. SPRAGUE, M.D.,
270 Commonwealth Avenue,
Chairman of the Program Committee.

NEW ENGLAND ROENTGEN RAY SOCIETY

The October Meeting of the New England Roentgen Ray Society will be held at the Boston Medical Library, Friday night, October 16, 1931.

Dr. John H. Sproull, Haverhill, Mass., will give a paper on "Roentgen Study of the Great Vessels."

T. R. HEALY, M.D., *Secretary.*

NEW ENGLAND HOSPITAL FOR WOMEN AND CHILDREN

The regular clinical conference of the New England Hospital for Women and Children will be held at the hospital, Dimock Street, Roxbury, on Thursday, October 15, at 8 P. M. There will be a report on some complications in the maternity department during the summer months, with special reference to five cardiac cases. There will also be a report on a case of diabetes mellitus.

ALICE H. BIGELOW, M.D., *Secretary.*

SOCIETY MEETINGS

CONGRESSES AND CONFERENCES

October 8-9—Vermont State Medical Society. See page 493, issue of September 3.

October 9 - May 6—The William Harvey Society. See page 745.

October 12-16—Announcement of the Clinical Congress of the American College of Surgeons. See page 1175, issue of May 28.

October 12-16—Special Course in Anesthesia. See page 555, issue of September 10.

October 14—The New England Dermatological Society. See notice on page 655, issue of September 24.

October 15—Medical Clinic at the Peter Bent Brigham Hospital. See page 744.

October 15—New England Hospital for Women and Children. See notice elsewhere on this page.

October 16—New England Roentgen Ray Society. See notice elsewhere on this page.

October 19-23—International Assembly of the Interstate Postgraduate Medical Association of North America. See page 1125, issue of May 21, and page 555, issue of September 10.

October 20—South End Medical Club. See notice on page 702, issue of October 1.

October 19-30—Graduate Fortnight of the New York Academy of Medicine. See page 1230, issue of June 4, and page 465, issue of August 27.

November 4—New England Heart Association. See notice elsewhere on this page.

April 4-8, 1932—The American College of Physicians. See notice on page 1232, issue of June 4.

Autumn 1931—Spring 1932—International Medical Postgraduate Courses in Berlin. See page 468, issue of August 27.

DISTRICT MEDICAL SOCIETIES

Franklin District Medical Society

Meetings will be held on the second Tuesday of November, January, March and May at the Weldon, Greenfield, at 11 A. M.

CHARLES MOLINE, Secretary.

Middlesex East District Medical Society

At a meeting of the executive committee the following schedule for the Middlesex East District Medical Society was arranged:

November—At Wakefield.

January—At Melrose.

March—At Reading.

May—At Woburn.

All meetings on the second Wednesday of each month unless otherwise announced at a later date.

Worcester District Medical Society

Wednesday evening, October 14, 1931—Worcester Chamber of Commerce Rooms, Franklin Street, Worcester, Mass. 7:45—Program: Recent Advances in the Etiology and Treatment of Cancer, by Dr. Clarence C. Little, Bar Harbor, Me.

Wednesday evening, November 11, 1931—Worcester Chamber of Commerce Rooms, Franklin Street, Worcester, Mass. 7:45—Program: Bone Lesions of Congenital Syphilis, by Dr. Stafford McLean, Clinical Professor, Diseases of Children, Columbia University College of Physicians and Surgeons, New York City.

Wednesday evening, December 9, 1931—Worcester Chamber of Commerce Rooms, Franklin Street, Worcester, Mass. 7:45—Program: Subject in the field of Eye, Ear, Nose and Throat to be announced later.

Wednesday evening, January 13, 1932—Worcester City Hospital, Worcester, Mass. 6:30—Dinner, complimentary by City Hospital. 7:45—Program: To be announced later.

Wednesday evening, February 10, 1932—Worcester State Hospital. 6:30—Dinner, complimentary by the Worcester State Hospital. 7:45—A psychiatric program to be announced later.

Wednesday evening, March 9, 1932—Memorial Hospital, Worcester, Mass. 6:30—Dinner, complimentary by Memorial Hospital. 7:45—A pediatric meeting with subjects to be announced later.

Wednesday evening, April 13, 1932—Grafton State Hospital, North Grafton, Mass. 6:30—Dinner, complimentary by Grafton State Hospital. 7:45—Program to be announced later.

Wednesday afternoon and evening, May 11, 1932—Annual Meeting. Program to be announced later.

ERWIN C. MILLER, Secretary.